DOCUMENT RESUME

ED 458 085 SE 064 138

AUTHOR	Owens, Douglas T., Ed.; Reed, Michelle K., Ed.
TITLE	Research in Mathematics Education, 1998.
INSTITUTION	ERIC Clearinghouse for Science, Mathematics, and Environmental Education, Columbus, OH.
SPONS AGENCY	Office of Educational Research and Improvement (ED), Washington, DC.
PUB DATE	2000-00-00
NOTE	123p.
CONTRACT	ED-99-CO-0024
AVAILABLE FROM	ERIC Clearinghouse for Science, Mathematics, and Environmental Education, 1929 Kenny Road, Columbus, OH 43210-1080. Tel: 800-276-0462 (Toll Free).
PUB TYPE	ERIC Publications (071) -- Reference Materials - Bibliographies (131)
EDRS PRICE	MF01/PC05 Plus Postage.
DESCRIPTORS	*Doctoral Dissertations; *Educational Research; Elementary Secondary Education; Higher Education; *Mathematics Education

ABSTRACT

This annual listing of research in mathematics education contains annotated citations of research papers and monographs dated 1998 and abstracted for the ERIC database. Journal articles focusing on the interpretation and implications of mathematics education research are also featured. An index of dissertations by institution and a list of journals searched are included. (MM)

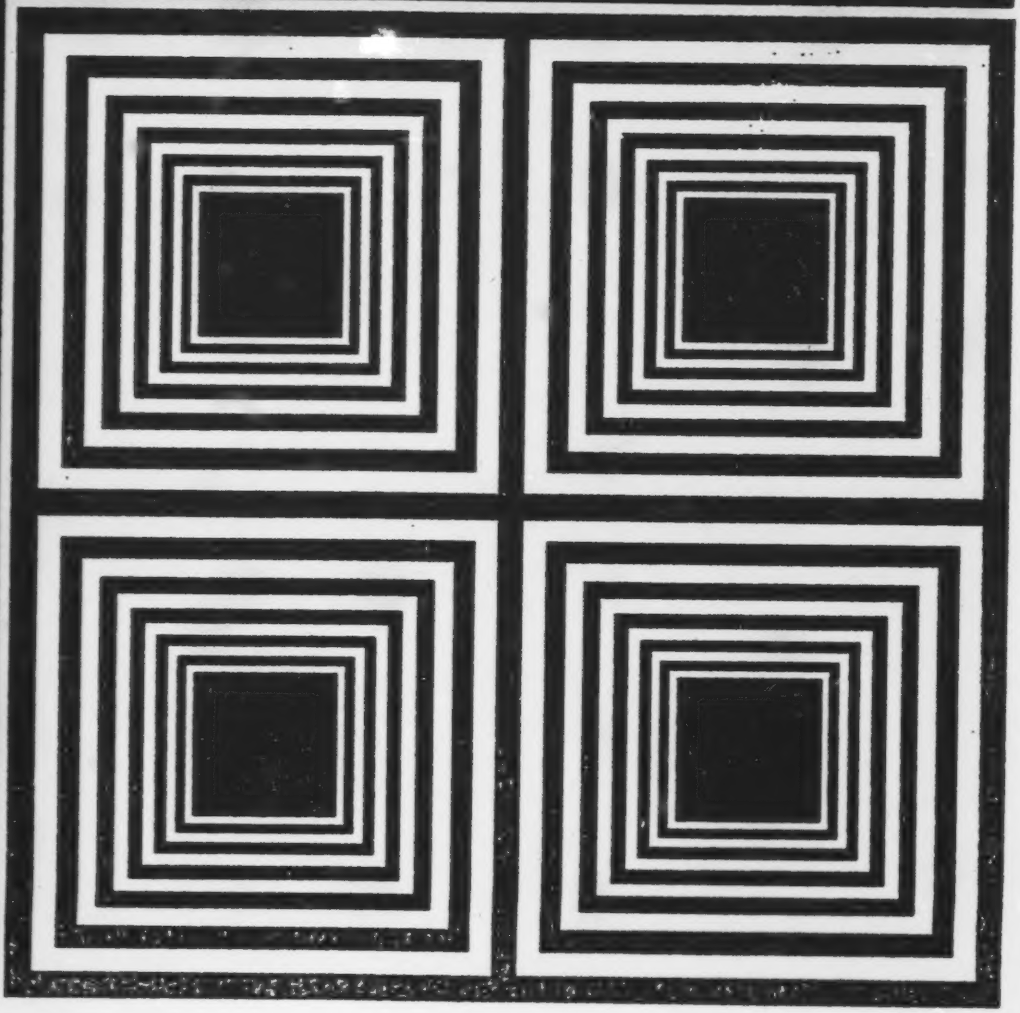
Reproductions supplied by EDRS are the best that can be made
from the original document.

ED 458 085

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
☒ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
● Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

Research in Mathematics Education 1998

Edited by Douglas T. Owens & Michelle K. Reed



ERIC Clearinghouse for Science, Mathematics, and Environmental Education

SE064138

BEST COPY AVAILABLE

RESEARCH IN MATHEMATICS EDUCATION
1998

Edited by

Douglas T. Owens
Michelle K. Reed

Produced by

ERIC Clearinghouse for Science, Mathematics,
and Environmental Education
2000

Cite as:

Owens, D. T., & Reed, M. K., (Eds.). (2000). *Research in mathematics education 1998*. Columbus, OH: ERIC Clearinghouse for Science, Mathematics, and Environmental Education.

ERIC Clearinghouse Accession Number: SE 064 138

This document and related publications are available from ERIC/CSMEE Publications, 1929 Kenny Road, Columbus, OH 43210-100. Information on publications and services are available on the World Wide Web at http://www.ericse.org, and by telephone at 1-800-276-0462.

The *Educational Resources Information Center* (ERIC) is a national information system operated by the U.S. Department of Education. ERIC serves the education community by collecting and disseminating research findings and other information that can be used to guide educational practice and reform. General information about the ERIC system is available on the World Wide Web at www.accesseric.org.

The ERIC *Clearinghouse for Science, Mathematics, and Environmental Education* (ERIC/CSMEE) is a component of the ERIC system and has resided at The Ohio State University since 1966, the year the ERIC system was established. This and the other 15 ERIC clearinghouses process research reports, journal articles, and related documents for indexing and abstracting in the ERIC database.

The ERIC database comprises the *Current Index to Journals in Education* (*CIJE*) and the *Resources in Education* (*RIE*) index of reports, books, and other documents not published in journals. The ERIC database is searchable online through a variety of sources, including www.accesseric.org:81/searchdb/searchdb.html.

Researchers, practitioners, and other scholars in education are invited to submit relevant documents to the ERIC system for possible inclusion in the ERIC database. If the ERIC selection criteria are met, the documents will be added to the database and announced in *RIE*. To submit, send two legible copies of each document and a completed Reproduction Release Form (available online at ericfac.piccard.csc.com/submitting.html#errp) to the appropriate clearinghouse or the ERIC Processing and Reference Facility. For documents focusing on science, mathematics, or environmental education, submit materials to: ERIC/CSMEE Acquisitions, 1929 Kenny Road, Columbus, OH 43210-1080, or call 1-800-276-0462. For information about documents focusing on other subject areas, please refer to the online instructions at ericfac.piccard.csc.com/submitting.html.

This publication was funded in part with funding provided by the U.S. Department of Education under contract no. ED-99-CO-0024. Opinions expressed in this document do not necessarily reflect the positions or policies of the Department of Education.

CONTENTS

Preface v

Key to Codes vii

Dissertations and Theses in Mathematics Education Reported in 1998
Kelly M. Costner, Beth D. Greene, Marlena F. Herman, John H. Wetzel, & James D. Atkinson, The Ohio State University 1

Dissertations by Institution 50

Research Articles in Mathematics Education Published in 1998
Beth D. Greene & S. Asli Ozgun-Koca, The Ohio State University 55

Journals Cited 83

Research Papers and Monographs in Mathematics Education Produced in 1998
Hea-Jin Lee, The Ohio State University 85

Index 105

PREFACE

The annual listing of research in mathematics education for many years was published as an issue of the Journal for Research in Mathematics Education, a publication of the National Council of Teachers of Mathematics. Two annual research listings for 1994 and 1995 were prepared by the ERIC Clearinghouse for Science, Mathematics, and Environmental Education (ERIC/CSMEE) with the financial support of NCTM. This is the third annual research listing prepared solely by ERIC/CSMEE.

This version is very similar to the last three versions listing the research reported in 1994, 1995 and in 1996. Each entry has been classified with ***Major*** and *Minor* codes and all entries are indexed by ***Major*** codes. Dissertation Abstracts which appeared in *Dissertation Abstracts International* during 1998 have been listed. Journal articles reporting research, as well as journal articles focusing on the interpretation and implications of research, have been included. Papers and monographs dated 1997 and abstracted for the ERIC database by the end of March 1998 are recorded. An index of dissertations by institution is provided. A list of journals cited is included.

As much as mathematics educators have valued the research listing in the past, with electronic databases becoming increasingly accessible, it is not clear in what format(s) future listings would be most useful. Though ERIC/CSMEE has the capacity to produce this listing, it is not clear the extent to which a single annotated listing of mathematics education research is still valued by the mathematics education community. We earnestly request feedback from you our reader, either in writing or by e-mail at the addresses listed below. This listing will be available through the ERIC/CSMEE World Wide Web site.

We sincerely hope you find this listing useful. *Again, we solicit your comments and recommendations.* You may contact ERIC/CSMEE by mail, ERIC Clearinghouse for Science, Mathematics and Environmental Education, 1929 Kenny Road, Columbus, OH 43210-1080; or by e-mail to ericse@osu.edu.

D.T.O.
M.K.R.

Key to Codes

The following topic codes have been used to indicate the major and minor emphases of each dissertation, journal article, and paper in this listing. Each entry has been assigned a minimum of one and maximum of three major codes, and any number of minor codes. The combined topic index at the end of the volume reflects only major codes, with entries listed in 18 clusters of related topics.

The grade level or educational level of each study is indicated in parentheses after the topic codes. Please note that the studies related to preservice or inservice teacher education are so indicated by the appropriate topic codes (Prsv, Insv). The level designated on teacher education studies refers to the grade level(s) at which the intern or teacher participants teach. Teachers as subjects are preceded with a level code. For example, elementary school teachers are coded EL, TE. Teacher education students preparing to teach at the elementary level are coded TE, EL, for example.

Topic Codes

Code	Definition
Ach	Achievement
A/S	Addition, subtraction
AdvM	Post-calculus mathematics
Aff	Affect
Alg	Algebra, pre-algebra
Anx	Anxiety (student's)
Arth	Arithmetic
Assm	Assessment, evaluation
Att	Attitudes (student's)
Blf	Beliefs (student's)
Calc	Calculus, precalculus
Cltr	Calculators (general)
ClIn	Classroom interaction
Comm	Communication
CAI	Computer-assisted instruction
Comp	Computers (general)
CC	Cross-cultural studies
Curr	Curriculum, programs
Decm	Decimals
D/R	Diagnosis, remedial mathematics
DscM	Discrete mathematics
Eqv	Equivalence, proportions
Est	Estimation
Eqty	Equity
Ethn	Ethnic, racial, cultural
Frac	Fractions, rational numbers
Gend	Gender differences
Geom	Geometry
Gift	Gifted (students)
GCal	Graphing calculators
Grpg	Grouping for instruction, cooperative learning
Impl	Implications of research, interpretations of research
Insv	Inservice teacher education, professional development
Int	Integers
IC	Integrated curriculum
Knw	Knowledge (student's)
Lang	Language, psycholinguistics
Lrnr	Learners (characteristics of)
LD	Learning disabled
Lrng	Learning, learning theories, cognitive development, constructivism
Styl	Learning style, cognitive style
Manp	Manipulatives
Matl	Materials (texts, other resources)
Meas	Measurement
Mscn	Misconceptions
M/D	Multiplication, division
M/CBL	Microcomputer/calculator based laboratory
MMed	Multimedia
Mtcg	Metacognition, reflection
NSns	Number sense
PlcV	Place value, numeration
Oral	Oral communication, classroom discourse
Patt	Patterns, relationships, math connections
RaPc	Ratio, proportion, percent
Pers	Personality
Phil	Philosophy, epistemology
Plan	Planning, descision making
Prob	Probability
PS	Problem solving, reasoning
Prsv	Preservice teacher education
Prf	Proof, justification
RaPc	Ratio, proportion, percent
Rep	Representations, modelling
Rsch	Research issues, methods
Revw	Reviews of research
Soc	Social factors, context, parents
Vis	Spatial visualization
Stat	Statistics
TAnx	Anxiety (teacher's)
TAtt	Attitudes (teacher's)
TBlf	Beliefs (teacher's)
TKnw	Content knowledge (teacher's), pedagogical knowledge
Tchr	Teachers (characteristics of)
Tchg	Teaching (role, style, methods)
Tech	Technology (general)
Whol	Whole numbers
Writ	Writing, journals

Level Codes

EC	Early childhood, K-4	EL	Elementary, K-8
MS	Middle grades, 5-8	SE	Secondary, 5-12
HS	High school, 9-12	K-12	All school levels
PS	Post secondary, 13-	ALL	All student levels
TE	Teacher education, teachers	T	Teachers

Dissertations and Theses in Mathematics Education Reported in 1998

Kelly M. Costner, Beth D. Greene, Marlena F. Herman, John H. Wetzel, & James D. Atkinson
The Ohio State University

This section lists 357 dissertations in mathematics education research that were abstracted in *Dissertation Abstracts International* during 1998. Each entry is coded (see Key to Codes) with one to three **major** topic codes (in bold type) and any number of *minor* topic codes, as well as the grade level code (in parentheses). Studies related to preservice or inservice teacher education are indicated by the appropriate topic codes (Prsv.Insv). The level designated for teacher education or teacher studies indicates the grade level(s) at which the intern or teacher participants teach, followed by the level code, "T" for teacher or "TE" for teacher education. All entries are indexed by major codes at the end of the volume (see page 105). An index of dissertations by institutions is included at the end of this section (see page 50).

Abu Diab, Tawfiq M. (1998). *The impact of writing assignments in mathematics classes on language minority students' performance.*(The American University). DAI-A 59(03), p. 761, Sep 1998. [AAT 9826667]

Minority students (n=32) and native English-speaking students (n=88) where chosen from both finite mathematics and basic statistics classes. Writing assignments were introduced to enhance student's understanding of mathematical concepts and problem solving capabilities. Minority students benefited no more than native English-speaking students.

Writ, Ethn, Lang, PS, Att, Stat (PS)

Agoora, Lammia Hasson. (1997). *A study of female gender bias in the discipline of mathematics at the secondary level in the Danbury (Connecticut) public schools.*(University of Bridgeport). DAI-A 58(09), p. 3371, Mar 1998. [AAT 9810911]

Seventh graders' (n=234) feelings towards mathematics, state achievement test scores of eighth graders (n=284), and PSAT and SAT scores of high school students (n=616) were analyzed. Females scored lower than males on all measures.

Gend, Ach, Att (SE)

Alexander, Edward Harrison. (1997). *An investigation of the results of a change in calculus instruction at the University of Arizona.*(The University of Arizona). DAI-A 58(08), p. 3049, Feb 1998. [AAT 9806815]

No significant differences in attitudes (n=45) and retention (n=14) were found between reform calculus students and students taught using traditional materials. Grade records indicated reform students somewhat outperformed traditional students in subsequent courses.

Calc, Curr, Att, Ach (PS)

Alexander, Nancy Sutton. (1997). *The role of the unit as a cognitive bridge between additive and multiplicative structures.*(The Louisiana State University and Agricultural and Mechanical College). DAI-A 58(07), p. 2572, Jan 1998. [AAT 9803578]

Seventh-grade students (n=4) participated in a 15 lesson teaching experiment involving the rational numbers. The study points to the need for more school practice in partitioning and measurement activities and more extensive use of modeling to facilitate development of unit concepts.

Frac, Meas, Arth (MS)

Allen, Bradford Drake. (1997). *Emotion and its influences on mathematical problem solving.*(University of Lowell). DAI-A 58(12), p. 4589, Jun 1998. [AAT 9818816]

Undergraduates (n=209) answered trait and emotion questionnaires while solving two math problems. A synthesized model based on the theories of Polya and Mandler was used. Results indicated that emotions may be more differentiated because physiological responses are stronger for better problem solvers.

Aff, PS (PS)

Ambrose, Rebecca Claire. (1998). *A classroom study of invented subtraction strategies.*(The University of Wisconsin - Madison). DAI-A 59(05), p. 1497, Nov 1998. [AAT 9825740]

The study focused on solving story problems involving subtraction with regrouping in a first/second grade classroom. Utilizing a strategy change perspective, the paths of development of five children's invented strategies were described. Children's natural inclinations were more powerful than the instructional guidance provided.

A/S, PS, Lrng (EC)

Anderson, Cindy Lou. (1997). *The impact of conceptual models and cooperative learning on the development of mental models for proportions.*(The University of Iowa). DAI-A 58(12), p. 4590, Jun 1998. [AAT 9819911]

The use of a computer-based conceptual model did not have an impact on sixth-grade students' (n=63) learning of proportions or mental models, and may, in fact, have inhibited their learning.

RaPc, Grpg, CAI (MS)

Arvidson, Mark L. (1997). *Reform-based instruction in mathematics: An inquiry into the relationship among student achievement, teacher attitudes and reform practices.*(The Claremont Graduate University). DAI-A 58(08), p. 3049, Feb 1998. [AAT 9805046]

An analysis of test scores of all secondary schools statewide in California showed that reform-based programs in mathematics have yet to increase achievement significantly. On the other hand, a number of benefits of reform-based approaches to instruction appeared promising.

Ach, TAtt, Curr (SE)

Arvold, Bridget Anne. (1998). *Becoming a secondary mathematics teacher: A case study.*(University of Georgia). DAI-A 59(06), p. 1980, Dec 1998. [AAT 9836936]

The researcher worked with the single case participant during a 12-month teacher education program and observed her during the first year of teaching. The study of goal orientations and the socio-cognitive blend of constructivist and interactionist theories contributed to explanations of the process and complexities of becoming a mathematics teacher.

Prsv, Tchr, Lrng (TE)

Atkins, George Stephen. (1998). *Effects of in-class focused writing tasks on connections and attitudes in college calculus.*(The University of North Carolina at Greensboro). DAI-A 59(05), p. 1497, Nov 1998. [AAT 9833387]

The study investigated the differences in attitudes and achievement of students who received one of two different methods of instruction: (a) emphasizing multiple representations using problem solving (n=14), and (b) emphasizing multiple representations using problem solving exercises that include focused in-class writing assignments (n=20).

Writ, Rep, Calc, PS, Patt (PS)

Atkinson, Mary Jean. (1997). *Facilitating constructive change in secondary mathematics classrooms in Zimbabwe.*(Simon Fraser University (Canada)). MAI 36(03), p. 672, Jun 1998. [AAT MQ24086]

The study is about a need to implement more active learning in secondary mathematics classrooms in Zimbabwe. The context (the country, school, teachers, and students) is interpreted on the basis of Michael Fullan's ideas.

Curr, Ethn, Lrng (HS)

Autrey, Kathy Rogers. (1998). *Using mathematical modeling for the prediction of success in developmental math.*(The Louisiana State University and Agricultural and Mechanical College). DAI-A 59(06), p. 1953, Dec 1998. [AAT 9836851]

This exploratory study investigated the possibility of developing a discriminant model to predict success in developmental mathematics (n=402). Although limited in its predictive ability, the model provides additional information for the development of intervention strategies.

D/R, Assm, Curr (PS)

Baab, Benjamin F. (1996). *The effect of interactive mathematical visualization elements upon undergraduate student statistical learning.*(University of San Francisco). DAI-A 58(11), p. 4213, May 1998. [AAT 9816415]

The study involved the degree of learning differences between two instructional tutorials: one that included dynamically controlled graphics and one that used static visual displays. Students in the static-graphics treatment performed better, but students in the dynamic-graphics treatment showed more accurate estimation skills (n=50).

Vis, Stat, CAI, Tech, Est (PS)

Baker, James Joseph. (1997). *Effects of a generative instructional design strategy on learning mathematics and on attitudes towards achievement.*(University of Minnesota). DAI-A 58(07), p. 2573, Jan 1998. [AAT 9800955]

A dynamic Logo-based (generative) instructional design was compared to a design that employed a static print format presentation strategy. Eighth-grade students (n=70) made significant achievement gains in the generative program, although achievement levels were the same as in the static print format group.

Ach, Att, Curr, Gend, CAI (MS)

Barrett, Jeffrey Edward. (1998). *Representing, connecting and restructuring knowledge: The growth of children's understanding of length in two-dimensional space.*(State University of New York at Buffalo). DAI-A 59(01), p. 112, Jul 1998. [AAT 9822106]

Case studies of four children in a teaching experiment setting were developed. The results of the study suggests that researchers may benefit from attending to the ways children partition continuous linear objects and by examining exactly how children coordinate length along complex geometric paths.

Lrng, Geom, Meas (EC)

Basta, Joanne Charlene. (1998). *Exploring the relationships among mathematics disposition, need for cognition, and mathematics achievement in middle school students.*(State University of New York at Buffalo). DAI-A 59(05), p. 1497, Nov 1998. [AAT 9833581]

Mathematical dispositions and need for cognition, were explored among students of one school because variations in each were thought to relate to four measures of mathematics achievement. Positive and significant associations were found among each of the relationships. Gender and level of mathematics appear not to affect the associations.

Att, Aff, Ach, Gend (MS)

Bateman, Mark. (1997). *The mathematics learning experiences of four immigrant students.*(The University of Western Ontario (Canada)). MAI 36(01), p. 27, Feb 1998. [AAT MQ21058]

This study was designed to explore the mathematics learning experiences of immigrant students to Canada. Grade 9 students (n=4) were interviewed about algebra. The results challenged the view that immigrant students' cultures, language and cognitive structures will affect their mathematics learning experiences.

CC, Styl, Ethn, Lrng (HS)

Batzer, Lyn Ann. (1997). *The effect of remedial education programs on academic achievement and persistence at the two-year community college.*(Western Michigan University). DAI-A 58(10), p. 3815, Apr 1998. [AAT 9813577]

The findings suggest that underprepared students who complete remediation achieve greater academic success in college-level English and college-level mathematics and persist longer towards their educational goals than academically underprepared students who do not complete remediation (n=766).

D/R (PS)

Bell, M. Dora. (1998). *Impact of an inductive conjecturing approach in a dynamic geometry-enhanced environment.*(Georgia State University). DAI-A 59(05), p. 1498, Nov 1998. [AAT 9832785]

The study compared high school geometry students in an inquiry-based setting with students taking the same course in a more traditional setting. Results support the use of an inductive approach to conjecturing utilizing dynamic geometry software to improve van Hiele levels, basic geometry knowledge, and student dispositions towards mathematics and technology.

Geom, Tchg, Tech, Att, Lrng (HS)

Bellamy, Barry Warren. (1997). *Implementing mathematics reform: A case study.*(University of Toronto (Canada)). DAI-A 59(06), p. 1953, Dec 1998. [AAT NQ27763]

A two-week unit incorporating a spreadsheet and mathematical modelling was designed and implemented as a means of investigating how mathematics teachers implement reform. Time in conjunction with an over-crowded curriculum was found to result in teachers' being unable to change the curriculum in content and process.

Curr, Tchg, Tech, Insv, Plan (HS)

Belmarez, Brett Lyndal. (1998). *The relationship between co-teaching and the mathematic achievement of groups of seventh-grade students with and without learning disabilites.*(Texas A&M University - Kingsville). DAI-A 59(04), p. 1053, Oct 1998. [AAT 9830372]

With the exception of significantly higher standardized test raw scores, the co-taught classroom was not conducive to greater mathematics achievement for students with learning disabilities. No significant difference was detected in mathematics achievement of students without learning disabilities who were co-taught compared to the general education class.

LD, Tchg, Ach (MS)

Bishop, Joyce Wolfer. (1997). *Middle school students' understanding of mathematical patterns and their symbolic representations.*(Illinois State University). DAI-A 58(07), p. 2573, Jan 1998. [AAT 9803721]

Four sequential pattern problems involving perimeter and area were administered to seventh- and eighth-grade students (n=23). Four levels of student thinking were identified.

Patt, Lrng, Meas, Geom (MS)

Blaine, Lloyd Frank. (1997). *Student achievement in an integrated math/science curriculum and a math only curriculum.*(Texas Woman's University). MAI 36(01), p. 32, Feb 1998. [AAT 1386376]

One group of fifth graders was exposed to a curriculum of mathematics and science while the other was exposed to a mathematics only curriculum. No significant difference in mathematics achievement was found on the posttest. The scores of the experimental group showed a significant difference between the pre and posttest.

Curr, Patt, Ach (MS)

Blanton, Maria Lynn. (1998). *Prospective teachers' emerging pedagogical content knowledge during the professional semester: A Vygotskian perspective on teacher development.*(North Carolina State University). DAI-A 59(03), p. 786, Sep 1998. [AAT 9825975]

Instructional conversation seemed to open the prospective middle school teacher's zone so that her understanding of teaching mathematics could be mediated with the assistance of a more knowing other. This, together with the cycle of mediation during student teaching, suggests a model for helping teachers develop their craft in the context of practice.

Prsv, TKnw, Lrng, TBlf (TE)

Blaszczynski, Carol Anne. (1997). *A descriptive profile of California postsecondary mathematics intervention efforts.*(The Claremont Graduate University). DAI-A 58(08), p. 3049, Feb 1998. [AAT 9805048]

Instructors (n=84) of remedial mathematics were surveyed, and community colleges and state universities were visited. Community college instructors tended to be more experienced and have higher rank. Instructional delivery methods were primarily lecture and discussion with little use of the computer.

D/R, Tchr, CAI (PS)

Bond, Jacynthe. (1997). *Etude de la relation entre la construction des operateurs de la fraction et la construction operatoire de la notion de rapport apures d'eleves de la premiere a la cinquieme secondaire.* [Title in English: A study of the relationship between the development of the concept of fraction operator and the operative construction of ratios among secondary students]. (Universite Du Quebec A Chicoutimi). MAI 36(05), p. 1231, Oct 1998. [AAT MQ26825]

Three tests were administered to 152 students (ages 12-19), revealing a statistical relationship between the two concepts. There seemed to be no relationship between achievement with fraction operations and these concepts.

Frac, RaPc, Ach (SE)

Bonnette, John Roy. (1997). *Investigating the framework of an instructional model for geometric theory, supported by visualization, in a descriptive geometry classroom.*(University of New Orleans). DAI-A 58(12), p. 4621, Jun 1998. [AAT 9820388]

Computer-aided design (CAD) was used in a college-level class. Computer explorations and demonstrations and collaborative activities were employed. This instructional model had a positive effect on students' visualization and their subsequent understanding of geometric theory.

Geom, CAI, Vis, Lrng, Tchg (PS)

Bosche, Wilbur Wayne, Jr. (1997). *Impact of a nontraditional technology-enhanced approach on student conceptualization in a precalculus course.*(Georgia State University). DAI-A 58(08), p. 3049, Feb 1998. [AAT 9804380]

A reform-based section of precalculus employing cooperative group activities, computer-assisted topic exploration, and graphing calculators, was compared to a lecture-based section (n not given). Females appeared to benefit the most from the reform-based approach. Reform-based students reported an increased level of interest in the course.

Calc, GCal, Curr, CAI, Gend, Grpg (PS)

Bowen, James Grant. (1997). *The development of an independent study guide to provide instruction to high school students in writing programs for the TI-82 and TI-83 graphics calculators.*(Oklahoma State University). DAI-A 58(08), p. 3050, Feb 1998. [AAT 9806526]

High school students (n=60) evaluated the guide and provided suggestions for revision on a questionnaire. The guide was evaluated and later published by Texas Instruments.

GCal, Matl (HS)

Bragg, Eliza B. (1998). *Pie or line...That is the question!*(California State University, Dominguez Hills). MAI 36(05), p. 1226, Oct 1998. [AAT 1389218]

This study investigates the effectiveness of multimedia computer assisted instruction as a tool for teaching fifth-grade students (n=30) about pie and line graphs. The results indicated that there was a significant gain in the subjects' understanding of the purposes for, and uses of, pie and line graphs.

CAI, Stat, MMed (MS)

Bremer, Mary Ellen. (1998). *An investigation of the effects of a unit of instruction on middle and secondary school teachers' knowledge of and attitudes toward the contemporary topics of chaos and fractals.*(University of Missouri - Saint Louis). DAI-A 58(11), p. 4213, May 1998. [AAT 9813657]

There were no significant differences between middle and secondary school teachers with regard to their knowledge of and attitudes toward the topics of chaos and fractals. There was a significant difference between pretest and posttest content knowledge regardless of teaching level.

Geom, Tknw, Tatt, Curr, Gend (T, MS, HS)

Brewer, Joanna Hess. (1997). *Seven elementary teachers' perceptions of constructivist theory and how it affects their mathematics instruction.*(The University of Alabama). DAI-A 59(01), p. 86, Jul 1998. [AAT 9821525]

Participants' perceptions of constructivist theory were similar to those of leading constructivists. They used the theory as a framework for the decisions they made about instruction. They also had evidence to indicate that their students could problem solve and reason and communicate mathematically.

Lrng, TBlf, Tchg (T, EC)

Brill, Melissa Beth Hanzsek. (1997). *The relationships among components of elementary teachers' mathematics education knowledge and their uses of technology in the mathematics classroom.*(University of Georgia). DAI-A 58(08), p. 3050, Feb 1998. [AAT 9807089]

Two teachers were studied over a period of six months. Knowledge components that had the greatest effect on technology use were the teachers' philosophies and beliefs and their hypotheses of students' knowledge. Knowledge of mathematics did not appear to have a direct relationship to technology use.

TKnw, Tech, TBlf (T, EL)

Britton, Barbara J. (1998). *Changing pre-service students' beliefs about the teaching and learning of mathematics.*(Illinois State University). DAI-A 59(05), p. 1530, Nov 1998. [AAT 9835899]

Undergraduate students (n=16) completed surveys, writing assignments, and interviews. Results indicated that courses intending to challenge students' beliefs about the nature of mathematics and the teaching and learning of mathematics can be effective. All of the students mentioned that there were aspects of the course that affected their beliefs.

Tblf, Prsv, Writ (TE)

Brombacher, Aarnout Abraham. (1997). *High school mathematics teachers' transition to a standards-based curriculum.*(University of Georgia). MAI 36(03), p. 672, Jun 1998. [AAT 1388007]

The support provided the teachers (n=9) by the program, their schools, and their colleagues was the critical factor that enabled them to make what they considered dramatic changes in their practice. For teachers to engage in classroom reform, more than curriculum materials is required. Sustained support in various forms is needed.

Curr, TBlf, Tchg (T, HS)

Brown, Darrell Gene. (1997). *Achievement in sixth-grade mathematics when inquiry activities are coupled with traditional instruction.*(Texas A&M University). DAI-A 58(07), p. 2510, Jan 1998. [AAT 9800693]

Students in a treatment group (n=39) were compared to students who received traditional instruction without inquiry activities (n=19). Control group students performed better on a posttest than treatment students, but not with statistical signifi-

cance. Control students also made fewer conceptual and procedural errors.
Ach, PS, Mscn, Oral, Curr (MS)

Brown, Dorothy Graves. (1994). *The effects on the academic achievement of sixth-grade students of military parents serving in Persian Gulf crisis.*(South Carolina State University). DAI-A 58(08), p. 3007, Feb 1998. [AAT 9806644]

Reading and mathematics scores on the California Achievement Test and grade point averages were used to indicate academic achievement for 194 sixth-grade students. There was a significant difference in post-CAT mathematics score between those whose parents were deployed in the Gulf War and those not deployed. Controlling for pre-GPA, there was a differnce in post-GPA.
Ach, Assm, Soc (MS)

Brown, Ellen Jean-Elizabeth. (1997). *The effects of extended block scheduling on math and science achievement in Missouri and Illinois high schools.*(Saint Louis University). DAI-A 58(08), p. 3075, Feb 1998. [AAT 9803755]

Twenty-eight high schools were selected for study. ACT math and science average scores were compared for students who participated in block scheduling and traditional scheduling. Science scores were significantly higher for females involved in block scheduling. Otherwise, no significant differences were found.
Ach, Soc, Gend (HS)

Brown, Harriet Adella. (1995). *The relationship between students' mathematics placement scores and final grades in basic, pre-technology, and college-level mathematics at a Mid-Atlantic technical and community college.*(Wilmington College (Delaware)). DAI-A 58(12), p. 4577, Jun 1998. [AAT 9820500]

Use of the Computerized Placement Test (CPT) was contrasted with the Comparative Guidance and Placement Test (CGP) (n=161). Age, sex, and race were included in prediction equations. The CPT was a more effective tool in placing students in pre-technology courses rather than in basic courses. The CGP indicated no useful predictive relationships.
Ach, D/R, Ethn, Gend (PS)

Brown, Melva L. (1997). *The behavioral and attitudinal differences between math students in a contextualized classroom learning environment and math students in a traditional classroom learning environment at a mid-size, rural community college.*(Miami University). DAI-A 58(08), p. 2980, Feb 1998. [AAT 9804353]

Four precalculus courses were selected for study. The change in percentage points in students' pre- and post-tests regarding perceptions about math were analyzed. Observations and interviews were also employed. The contextualized pedagogy was not found to be as effective as hypothesized.
Att, Calc, Rep, Blf (PS)

Bryan, Tommy Jack. (1997). *The knowledge and beliefs of prospective secondary mathematics teachers: An analysis of five levels.*(The University of Texas at Austin). DAI-A 59(01), p. 113, Jul 1998. [AAT 9822551]

College juniors and seniors were interviewed, with conceptual knowledge of school mathematics subject matter the focal point. Only about 20% of the time were subjects able to produce conceptually sound explanations for the mathematical ideas explored in the interviews.
Prsv, TKnw, TBlf, Curr (TE)

Bryant, Deborah Reid. (1998). *The small group instruction method in calculus compared with the traditional method of teaching college level calculus and effects on cognitive development, mathematical self-concept and mathematical achievement with respect to gender and race.*(University of Maryland College Park). DAI-A 59(06), p. 1954, Dec 1998. [AAT 9836516]

The small group instruction method (n=30) was compared with the traditional method (n=40) in Calculus I at an urban university. The data confirm the relationship between mathematical self-concept and achievement. A trend toward higher achievement supports the small group method.
Calc, Grpg, Att, Ach, Ethn, Gend, Lrng (PS)

Buck, David Seldon. (1994). *The effects of a summer enrichment program on mathematically bright students.*(South Carolina State University). DAI-A 58(08), p. 2981, Feb 1998. [AAT 9806645]

Sixth- and seventh-grade students (n-187) took standardized tests as pretest and posttest. The results of this study showed that there was no significant difference between the mathematics achievement of the underpredicted students and the students whose aptitude measurement was equal to their mathematics achievement scores.

Ach, Gift (MS)

Bunt, Nancy R. (1997). *The early evolution of southwestern Pennsylvania's regional math/ science collaborative from the leadership perspective.*(University of Pittsburgh). DAI-A 59(01), p. 69, Jul 1998. [AAT 9821235]

The collaborative's story is narrated by its founding director. A number of suggestions for leaders of evolving collaboratives are offered.

IC, Plan (K-12)

Burns, Robert Thomas. (1998). *Gender differences associated with enrollment in the Texas Academy of Mathematics and Science.*(University of North Texas). DAI-A 59(04), p. 1086, Oct 1998. [AAT 9830823]

Analysis of the data indicated no difference between females (n=135) and males (n=168) concerning factors that influenced them to enroll in TAMS. Both ranked extrinsic interest including job opportunity, salary, and promotion, as the most important factor. The least important factor for both females and males was family encouragement.

Gend (PS)

Burton, Elizabeth Bridget. (1998). *An investigation of the school-level generalizability of performance assessment results.*(University of Colorado at Boulder). DAI-A 59(06), p. 1843, Dec 1998. [AAT 9838343]

The study includes three facets: (1) an examination of the school-level generalizability of a large-scale mathematics performance assessment; (2) a comparison of school- and pupil-level generalizability; and (3) an examination of year-to-year changes in assessment results at the school level.

Assm (MS)

Burton, Linda Kramer. (1998). *The effectiveness of an intelligent tutoring system on the attitude and achievement of developmental mathematics students in a community college.*(Florida International University). DAI-A 59(03), p. 761, Sep 1998. [AAT 9826236]

The experimental group (n = 35) had six lessons with real-world problems using intelligent tutoring system instruction. The control group (n = 24) had six lessons with real-world problems using traditional instruction and graphing calculator. An intelligent tutoring system may impact overall mathematics achievement and problem solving.

D/R, PS, Tech, Ach, Att (PS)

Calhoun, David Owen. (1996). *The mathematics reform movement: Measuring the degree of reform in high school mathematics classrooms.*(California State University, Fresno). MAI 36(01), p. 28, Feb 1998. [AAT 1386267]

Classrooms were analyzed using the instrument developed and independently by a series of experts. Linear regression was performed using four independent variables: (a) questionnaire, (b) video analysis of teachers, (c) video analysis of curriculum, and (d) video analysis of students. The expert ratings provided the dependent variable.

Curr (HS)

Callan, Roger John. (1998). *An experimental investigation of the relationships among the time-of-day preferences of grade nine students taking a sequential I test in algebra and achievement in the test.*(St. John's University (New York)). DAI-A 59(04), p. 1131, Oct 1998. [AAT 9828754]

[This investigation analyzed the effects of matching and mismatching time-of-day preferences on the test scores of an algebra test administered to ninth-grade high-school students (n=341) in the morning and in the afternoon. Students reporting a morning preference scored significantly higher when taking the test in the morning.

Assm, Ach, Styl, Alg (HS)

Campbell, Barbara Jean. (1998). *Changes in student teachers' thinking and beliefs about mathematics during the student teaching experience.*(University of Maryland College Park). DAI-A 59(06), p. 1954, Dec 1998. [AAT 9836513]

Changes were measured through the use of preteaching and postteaching surveys, student teacher observations, and interviews. A statistically significant difference was found only in the area of the role of the teacher. The change moved away from viewing the eacher as a facilitator to viewing the teacher as an expert who shows or models.

TBlf, Insv (TE)

Carroll, Beatrice Parneil. (1995). *An experimental study of the effect of cross-age tutoring on the mathematical achievement of ninth-grade students enrolled in Algebra I.*(South Carolina State University). DAI-A 58(08), p. 2917, Feb 1998. [AAT 9806649]

Statistical analysis of the relationship between the variables indicated that there were significant differences in the posttest Pre-Algebra I results of low achieving ninth grade students. Students who participated in the peer tutoring treatment produced a significantly higher gain. Males' and females' scores differed. No differences were detected for economic status.

Alg, Tchg, Ach, Gend, Soc (HS)

Carson, Cristi Lin. (1997). *The structure of mathematics teachers' beliefs, attitudes and perceptions as a basis for their reasoned intentions to use traditional and reformed teaching pedagogies.*(University of California, Riverside). DAI-A 58(11), p. 4213, May 1998. [AAT 9816654]

A survey was completed by mathematics teachers (n=167) from all grade levels, and causal relationships among teachers' responses were modeled. The Theory of Reasoned Action was found to provide a good fit to these responses.

Tchg, TAtt, TBlf, Curr (T)

Cassity, Constance Louise. (1997). *The relation of gender, spatial visualization, mathematical confidence, and classroom graphing calculator utilization to conceptual mathematical performance: Learning with technology.*(University of Wyoming). DAI-A 58(08), p. 3095, Feb 1998. [AAT 9805262]

Significant correlations were found between spatial visualization, mathematical confidence, and basic algebra ability and the dependent variable conceptual mathematical performance. Student interviews revealed a preference for algebraic solutions but a recognition of the usefulness of graphing.

Vis, Aff, GCal, Gend, Alg, Lrng (HS)

Castillo, Tony Facundo. (1997). *Visualization, attitude, and performance in multivariable calculus: Relationship between use and nonuse of graphing calculator.*(The University of Texas at Austin). DAI-A 59(02), p. 438, Aug 1998. [AAT 9824883]

Students in a treatment group were given supplemental exercises to perform with graphing calculators to enhance three-dimensional visualization. No significant differences were found between treatment and nontreatment groups in mathematical processing preference or in attitudes. Overall performance by the treatment group was significantly higher.

GCal, Ach, Att, Calc, Vis (PS)

Chadwick, Dianne Kay Hutton. (1997). *Computer-assisted instruction in secondary mathematics classrooms: A meta-analysis.*(Drake University). DAI-A 58(09), p. 3478, Mar 1998. [AAT 9809425]

The 41 studies reviewed indicated that CAI is more effective than conventional instruction for secondary mathematics. Variables that appeared to moderate effect size of CAI included source, quality, and duration of study; ability level; affect; gender; and learning theory orientation.

CAI, Revw, Ach, Aff, Gend, Lrng (SE)

Chen, Jen-Jen. (1997). *Cross-cultural comparisons: The word problem-solving abilities of second-grade students from Taiwan and the United States.*(University of California, Santa Barbara). DAI-A 58(07), p. 2528, Jan 1998. [AAT 9800442]

Three kinds of knowledge underlying problem-solving processes were compared. Chinese and American children were found to differ in schematic and procedural knowledge, and Chinese students possessed better integration of knowledge than their American counterparts.

CC, PS, Knw (EC)

Cheng, Hero Yu-Hsiung. (1998). *Curriculum effectiveness for elementary school students with math learning difficulties.*(Saint Louis University). DAI-A 59(01), p. 70, Jul 1998. [AAT 9822858]

The Math Diagnostic Test (MDT) is a three part test consisting of addition, subtraction, multiplication and division. The control group and the experimental group took the MDT before and after the Special Academic Program (SAP). Data assisted in determining whether or not the experimental group had improved in certain areas.

D/R, Assm, Matl (EL)

Cheong, Yuk Fai. (1997). *Access to eighth-grade alge-*

bra: A Bayesian, multilevel analysis.(Michigan State University). DAI-A 58(09), p. 3413, Mar 1998. [AAT 9808050]

The first objective was to examine what school- and state-level factors may influence a public school's decision to offer eighth-grade algebra for high school credits. The second was to develop and evaluate a fully Bayesian, multilevel approach that enables the study of public schools as distributors of learning opportunities in advanced mathematics.

Alg, Curr, Ethn, Soc, Eqty (MS)

Chronaki, Anna. (1997). *Case studies in the teaching of mathematics through the use of art-based activities.*(University of Bath (United Kingdom)). DAI-C 59(01), p. 7, Spr 1998.

Three case studies of year-8 students and their teachers are reported. The study concluded that the use of artistic work for mathematics teaching needs to be seen as taking place within a variety of contexts and needs to consider the mediating role of the teacher.

Vis, Comm, Tchg, Patt (MS, T)

Clark, Frances Miriam Burt. (1997). *The effects of two second-year algebra textbooks on changes in secondary students' attitudes as measured by the mathematics attitude inventory.*(The University of Mississippi). DAI-A 58(11), p. 4170, May 1998. [AAT 9816958]

The UCSMP advanced algebra textbook was compared to a traditional textbook (n=95). Results showed a significant difference between groups in the area of value of mathematics in society but no differences in anxiety, self-concept, enjoyment, and motivation.

Att, Alg, Curr, Aff (HS)

Clarke, Prema. (1998). *The pedagogy of culture: Cultural models of teacher thinking and teaching in Bangalore, South India.*(Harvard University). DAI-A 59(04), p. 1124, Oct 1998. [AAT 9830057]

This dissertation explores cultural models of pedagogy among 24 mathematics and social studies, eighth grade teachers. Four cultural entities in the larger meaning system, holism/regulation, hierarchical relationships, collective decision-making and a duty based code of living appear to constitute explicit and implicit models of teacher thinking and teaching.

Ethn, TKnw, Tchg (MS)

Cleaveland, Lynn Laurey. (1997). *Effects of a continuous review with a traditional algebra text.*(University of Arkansas). DAI-A 58(08), p. 2982, Feb 1998. [AAT 9805837]

An experimental group completed homework assignments consisting of approximately five problems from the new lesson and the remaining problems from previously taught lessons. The continuous review group scored significantly higher on the final examination.

Alg, Tchg, Ach, Gend (PS)

Coates, James Darrell. (1997). *Mathematics anxiety and its relationship to students' perceived teacher and parent attitudes toward mathematics.*(The Ohio University). DAI-A 58(12), p. 4590, Jun 1998. [AAT 9820463]

College freshmen (n=257) completed the Mathematics Anxiety Rating Scale and a questionnaire. No differences between anxiety and perceived attitudes of parents or teachers were found. A significant correlation was found between achievement and anxiety. No gender differences in anxiety were found.

Anx, Att, Soc, Ach, Gend (PS)

Coates, Judith Mary. (1998). *The art of creating a school: The Illinois Mathematics and Science Academy, 1979-1986.*(Loyola University of Chicago). DAI-A 58(12), p. 4590, Jun 1998. [AAT 9819599]

This study analyzes the Illinois Mathematics and Science Academy's stages of development over a seven year period prior to its opening in September of 1986. This dissertation analyzes the methods, procedures, and marketing strategies utilized by the individuals and organizations who successfully managed the development of the Academy.

Curr, Soc (HS)

Colarulli, Rosemary. (1998). *Effects of teaching mathematics to learning style perceptual preference on academic achievement of seventh-grade middle school students.*(Florida Atlantic University). DAI-A 59(02), p. 438, Aug 1998. [AAT 9824782]

Students in the experimental group were introduced to new mathematics material with a global story and taught in their primary learning style perceptual preference: auditory, tactile, kinesthetic, or visual. Neither the main effect nor the interactions between treatment and demographic variables (race, gender, learning styles) were significant.

Styl, Ethn, Gend (MS)

Cole, Beth Rosenstein. (1998). *On-line professional development: Exploring participation in MATHLINE.*(The University of Wisconsin - Madison). DAI-A 59(05), p. 1444, Nov 1998. [AAT 9813715]

The study focused on the Elementary School Mathematics Project (ESMP) part of MATHLINE, a project of the Public Broadcasting System (PBS), to develop a method to describe what happens on-line. All of the messages posted on each of four representative learning communities' electronic bulletin boards were collected for each of four noncontiguous weeks.

Tech, MMed (EL)

Contreras Francia, Jose Natividad. (1997). *Teachers' ways of knowing and teaching: A classroom investigation of one experienced teacher's use of his knowledge of both mathematical and pedagogical representations about algebraic multiplication.*(The Ohio State University). DAI-A 58(07), p. 2573, Jan 1998. [AAT 9801671]

This study investigated a teachers' knowledge of representations and use of that knowledge during instruction in eighth-grade mathematics. For each of 41 content curriculum events, CCEs, the participant was asked to provide a symbolic representation, a mathematical proof, a pictorial representation and a story-problem representation.

TKnw, Rep, Tchg, Alg, M/D (T, MS)

Cook, Roberta Parrino. (1997). *An exploration of the relationship between mathematics anxiety level and perceptual learning style of adult learners in a community college setting.*(Florida Atlantic University). DAI-A 58(10), p. 3801, Apr 1998. [AAT 9810974]

The study investigates the relationships between and among mathematics anxiety level, perceptual learning style (audio, visual, tactile/kinesthetic), age, gender, and mathematics performance. Subjects were community college students (n=501) taking remedial-credit Introductory Algebra and college-credit Basic College Algebra.

D/R, Styl, Gend (PS)

Cowan, Pamela Catherine. (1997). *Using information technology to assess and report mathematical attainment as a multidimensional construct against a scale of standards.*(Queen's University of Belfast (Northern Ireland)). DAI-C 59(03), p. 487, Fall 1998.

The author advocates a new generation of assessment tools which draw upon the information handling techniques of desktop computers, to adapt to the proficiency of the individual. While these new assessment tools are developed in a British National Curriculum context, they are applicable to any standards-based assessment system.

Assm, Ethn, Curr (All)

Crawford, Pamela. (1998). *Fostering reflective thinking in first-semester calculus students.*(Western Michigan University). DAI-A 59(06), p. 1954, Dec 1998. [AAT 9835498]

This study focuses on the fostering of reflective thinking in students in a reform calculus course through completion of homework assignments incorporating reflective writing and concept mapping tasks, and the effect of these assignments on student understandings of calculus and conceptions of mathematics using quantitative (n=25, 18) and qualitative (n=7) techniques.

Calc, Writ, Mtcg, Blf (PS)

Crespo, Sandra. (1998). *Math penpals as a context for learning to teach: A study of preservice teachers' learning.*(The University of British Columbia (Canada)). DAI-A 59(05), p. 1530, Nov 1998. [AAT NQ27125]

Thirteen preservice teachers engaged in a mathematics letter writing exchange with grade 4 students. This mathematics penpal experience was meant to provide a 'laboratory setting' for preservice teachers. Interactions with students, in turn, served as the focus of further class discussions and reflective journal writing.

Prsv, Writ, Lrng (TE)

Crowe, William David. (1997). *The electronic support of distance mathematics students.*(Open University (United Kingdom)). DAI-C 59(03), p. 485, Fall 1998.

Participants were introduced to a computer algebra package and communication software, using distance teaching materials. They were then provided with sample chapters of a new introductory mathematics course from the Open University in the UK. Results provide evidence that a use of relatively "low-tech" tools can be highly effective in facilitating students' learning

Tech, Alg, Curr (PS)

Danine, Abderrahim. (1997). *Systeme expert comme outil de depistage et de diagnostic: une etude autour du concept de soustraction au niveau primaire.* [Title in English: An expert system as a detection and diagnostic tool: A study using the concept of subtraction at the primary level]. (Universite Laval (Canada)). MAI 36(04), p. 890, Aug 1998 . [AAT MQ25292]

A prototype expert system was used to evaluate students using the subtraction algorithm. The study revealed several possible contributions of expert systems as evaluation tools.

Assm, D/R, A/S, Impl, Lrng (EC)

Daves, David Philip. (1997). *The differences in standardized test scores of students in varied school period configurations.*(The University of Southern Mississippi). DAI-A 58(08), p. 2920, Feb 1998. [AAT 9806480]

The study concentrated on mathematics achievement and whether a difference existed based on the four different types of schedules examined. The achievement scores of students in a 4 x 4 schedule type were significantly higher than those of students in each of the other schedules studied: the A/B block, the six-period, and the seven-period schedule types.

Ach, Soc, Curr (HS)

Dawkins, George Ricardo. (1997). *Interactive teaching in mathematics.*(University of Alberta (Canada)). MAI 36(01), p. 18, Feb 1998. [AAT MQ21235]

The study investigated a North American designed instructional model (inclucing cooperative/collaborative and individual learning) for effective high school mathematics instruction applied to a Jamaican high school in grade 8 for four months. The treatment group significantly outperformed the control group on achievement and attitude towards mathematics.

CC, Tchg, Ach, Att (MS)

Desmond, Nancy Shaw. (1997). *The geometric content knowledge of prospective elementary teachers.*(University of Minnesota). DAI-A 58(08), p. 3050, Feb 1998. [AAT 9804715]

A model describing the integrated mathematical abilities like communication and reasoning and the geometry topics of symmetry and transformations was developed. Prospective teachers who had completed mathematics and methods courses completed an instrument developed to reflect the abilities of the model and 20 percent were interviewed.

Geom, TKnw, Comm, PS (TE, EL)

Devaney, Thomas Anthony. (1997). *Relationship of teacher training and mathematics achievement using the trial state assessment and hierarchical linear modeling.*(Mississippi State University). DAI-A 58(07), p. 2060, Jan 1998. [AAT 9801481]

This study combined data from a trial state mathematics assessment with hierarchical linear modeling to examine the achievement differences related to the number of undergraduate mathematics courses taken by a teacher, the teacher's undergraduate major, and whether a teacher was trained in gender equity and cultural diversity issues.

Assm, Ach, Eqty, Soc, Tchr (TE)

Dias, Ana Lucia Braz. (1997). *Theorizing the practice of mathematics education in a Freirean adult literacy program.*(Indiana University). DAI-A 58(08), p. 3050, Feb 1998. [AAT 9805405]

Using cyclic alternations of reflection (about practice in mathematics education) and action as a strategy for the improvement of both practice and theoretical understanding, practitioners negotiated and implemented alternative practices for the program's teacher preparation course. Methodology was critical action research with critical reconstructive analysis.

Lrng, Eqty, Tchg, Insv (PS)

Dickinson, Janet Fisher. (1997). *Influence of the Early Language Connections program on primary student achievement in Fort Smith, Arkansas public schools.*(University of Arkansas). DAI-A 59(01), p. 140, Jul 1998. [AAT 9820789]

For students who completed the Early Language Connections program versus students who did not complete ELC, the purpose of the study was to

determine if there was a difference between reading and math achievement test scores overall and with regard to ethnic minority/majority students and disadvantaged/advantaged students.
Ach, Ethn, Soc (EC)

Diel, Michele Kravitz. (1997). *Affective responses of female students enrolled in a two-year college developmental mathematics program.*(The University of New Mexico). DAI-A 58(10), p. 3867, Apr 1998. [AAT 9813135]

The purpose of the study involving 99 female students enrolled in a two-year college developmental mathematics program was to investigate the effects of mathematics performance, confidence in mathematics performance, and mathematics anxiety, in a problem solving environment.
Ach, Anx, Blf, D/R, Gend, PS (PS)

Dilullo, Linda Kay. (1997). `.(Auburn University). DAI-A 58(07), p. 2574, Jan 1998. [AAT 9802445]

A post hoc statistical power analysis using classifications of small and medium effect sizes and the sample sizes was performed on 81 statistical tests. The results suggest that low power is indeed a cause of the discrepancies that exist in the research investigating the relationship between mathematics anxiety and mathematics performance.
Revw, Anx, Ach (PS)

Dlamini, Maxwell Sidumo. (1998). *The relationship between students' attitude toward mathematics and achievement in mathematics in Swaziland.*(The Ohio State University). DAI-A 59(01), p. 113, Jul 1998. [AAT 9822301]

Students who were taught by teacher-centered teachers obtained higher scores than those who were taught by student-centered teachers. The order of importance of the independent variables in explaining variance of achievement for all students and males was interest, confidence, usefulness, anxiety, and type of teacher. Among female students, the order was confidence, interest, usefulness, teacher, and anxiety.
Ach, Anx, Aff, Ethn, Gen (SE)

Doyle, Pamela D. (1997). *Free time and negative reinforcement to improve academic completion and accuracy for mildly disabled students.*(The University of Utah). DAI-A 58(11), p. 4183, May 1998. [AAT 9813184]

Fifth-grade (n=3) and sixth-grade (n=4) students who were identified by their resource teacher as having difficulty completing independent mathematics assignments were included. All students improved their test scores on the skills they practiced from pretest to posttest. Both teacher and students thought the program was beneficial.
LD, Ach, Tchg (EL)

Draznin, Sharon Z. (1997). *A window into mathematical thinking: Teachers' reflections on students' journal writing.*(National-Louis University). DAI-A 59(02), p. 438, Aug 1998. [AAT 9823451]

Early childhood teachers (n=3) reacted to their students' weekly mathematics journals through interviews, focus group meetings, and the teachers' journals. Students' mathematics journals can be valuable assessment tools, providing teachers with insight into students' thought processes, thereby assisting teachers in decision making as well as teacher reflective practice.
Assm, Writ, Tchg, Insv (T, EC)

Drueck, Jane V. (1997). *Factors related to conceptual understanding and solution procedures for two-digit addition and subtraction in second- grade average-math achievers and low-math achievers at-risk for learning disabilities.*(Northwestern University). DAI-A 58(11), p. 4232, May 1998. [AAT 9814205]

The present study examined average-math achievers and low-math achievers who were at-risk for mathematics learning disabilities. Through a clinical interview format, interviewers tracked the students' progress in terms of accuracy, conceptual structure, and representational method.
A/S, LD, D/R (EL)

Duarte, Valerie Grimes. (1997). *Using expert judgment to identify dimensions indicative of appropriate computer use in the mathematics classroom based on the NCTM Standards.*(The University of Connecticut). DAI-A 59(01), p. 86, Jul 1998. [AAT 9821902]

Teachers were rated by four coders to indicate characteristics evident during instruction. Experts rated representative grades 5-8 teacher profiles (n=20) in terms of quality of instruction. Quantitatively, teacher action was the best predictor of quality, followed by environment, student action, and task. Subjectively, experts rated only environment and task as significant.
Comp, Tchg, Curr (T, MS)

Dube, Amos Mqiniseli. (1997). *The perceptions of standard five pupils regarding technology.*(University of Pretoria (South Africa)). DAI-A 58(11), p. 4197, May 1998.

The perceptions of pupils regarding science and mathematics were investigated through a questionnaire that was completed by all standard-five pupils at randomly selected schools in South Africa. Results revealed that most pupils do not perceive these subjects negatively. They are aware that science and mathematics offer better career opportunities.

Att, Lrnr, Ethn, Tech (All)

Durant, Kingsley, Jr. (1997). *Teaching graphing and functions: Classroom practice and professional development.*(University of Virginia). DAI-A 58(07), p. 2574, Jan 1998. [AAT 9738895]

Teachers (n=3) participated in the study, having their classes observed and videotaped throughout their teaching units on functions during the year preceding and the year following a summer education course. Tension was observed between the dictates to change the nature of the mathematical tasks and the teachers' existing communication patterns and beliefs.

Insv, Calc, Tchg, Comm, Blf (TE)

Early, Janice Webb. (1998). *The impact of peer tutoring on self-esteem and Texas Assessment of Academic Skills mathematics performance of tenth-grade students.*(Texas A&M University - Commerce). DAI-A 59(04), p. 1054, Oct 1998. [AAT 9829500]

Students (n=134) participated in a 2-week session of peer tutoring on students' achievement (control group n=155). Participating in peer tutoring as either a tutor or tutoring recipient raises the students' self-concept scores, and peer tutoring was a predictor of academic achievement for tutors and recipients

Assm, Ach, Tchg (HS)

Ebby, Caroline Brayer. (1997). *Practicing what we teach: A constructivist approach to mathematics teacher education.*(University of Pennsylvania). DAI-A 58(11), p. 4214, May 1998. [AAT 9814838]

The study focused on the process of change in student teachers' conceptions of teaching, learning, and mathematics. Four ethnographic case studies of preservice teachers in an inquiry-centered graduate elementary education program were conducted over the course of an academic year

Prsv, Lrng, Blf (TE, EL)

Edwards, Barbara Elaine Scharfer. (1997). *Undergraduate mathematics majors' understanding and use of formal definitions in real analysis.*(The Pennsylvania State University). DAI-A 58(12), p. 4590, Jun 1998. [AAT 9817469]

Junior- and senior-level mathematics majors (n=8), participated in in-depth, task- based interviews during their first real analysis course. Students did not necessarily share mathematicians' understanding of the role of definitions, and they had difficulties with the wording and logic, especially in the continuity definitions.

AdvM, Prf, PS (PS)

Egger Moellwald, Francisco. (1997). *Perspectives of elementary school teachers concerning the link between mathematics taught in school and everyday mathematical practice.*(Indiana University). DAI-A 58(08), p. 3051, Feb 1998. [AAT 9805407]

This study explored the perspectives of in-service elementary teachers (n=7) with regard to (1) their mathematical reality, considering past experiences as students and teachers; (2) the integration between school mathematics and the mathematics practiced in the students' cultural environment; and (3) their role in the construction of a mathematics curriculum.

Insv, TAtt, TBlf, Curr, Soc (TE, T)

Ehlers, Gretchen Ann. (1997). *Attitudes and experiences of Mexican-American females in mathematics.*(San Jose State University). MAI 36(01), p. 16, Feb 1998. [AAT 1386198]

Mexican-American female high school sophomores (n=11) with differing attitudes towards mathematics were selected from the initial group surveyed. These students were interviewed about their attitudes and experiences in mathematics. Responses indicated that this group enjoyed mathematics and felt it would be useful in their futures.

Att, Blf, Ethn, Gend (HS)

Elder, Phillip Raymond. (1998). *Selected algebra competencies of high school students completing applied mathematics courses and those complet-*

ing a traditional algebra course.(Auburn University). DAI-A 59(05), p. 1498, Nov 1998. [AAT 9835328]

Algebra achievements were compared for high school students who completed Applied Mathematics II (14 classes; n=) and students who had completed traditional Algebra I (24 classes; n=340). Students who completed Applied Mathematics II attained a higher level of selected algebra competencies than students who completed Algebra I.

Assm, Ach, Alg (HS)

Ellerman, Tracie Bidwell. (1998). *A study of calculator usage on the mathematics achievement of seventh- and eighth-grade students and on attitudes of students and teachers.*(Louisiana Tech University). DAI-A 59(04), p. 1101, Oct 1998. [AAT 9829094]

Achievement was measured by the Mathematics Concepts and Applications sections of the California Achievement Test. Calculator usage during assessment appeared to have a positive influence on achievement. Student and teacher survey responses appeared to support calculator usage for both instructional and assessment purposes.

Cltr, Ach, Att, Assm,Tchg, TAtt (MS & T)

Everage, Hilda Irene Holman. (1997). *The effects of staff development on hands-on teaching and assessment of Illinois benchmarks in early elementary school mathematics and science.*(Saint Louis University). DAI-A 58(08), p. 2923, Feb 1998. [AAT 9803767]

This study determined the relationship of teachers having college courses or staff development that included methods of teaching and assessing and their use of hands-on methods to teach or assess the learning benchmarks. The research determined the relationship between the teaching and assessment of benchmarks with 11 selected teacher characteristics.

Insv, Tchr, Tchg, Assm (T, EC)

Eyles, Joseph William. (1998). *R. L. Moore's calculus course.*(The University of Texas at Austin). DAI-A 59(06), p. 1954, Dec 1998. [AAT 9837954]

Dr. Robert Lee Moore's techniques used in teaching are investigated in graduate level and upper division mathematics courses with respect to the calculus reform movement. Two descriptions of his course are presented.

Calc, Tchg, Curr (PS)

Facemyer, Kevin Curry. (1996). *The 1995 Washington State University Virtual Science and Mathematics Fair: Innovative educational uses of the internet and their impact on the culture of education.*(Washington State University). DAI-A 58(08), p. 2923, Feb 1998. [AAT 9806718]

The interaction between technology and learners was studied using ethnotechnography at various levels of education. Evidence supports the idea that the Internet is a major social reconstructive force in education and in our society.

Tech, Comp, Lrng, Tchg (K-12)

Fan, Chung-Ju. (1998). *An examination of the Texas Assessment of Academic Skill in Mathematics for grades three to eight: Its reflection on NCTM Standards.*(The University of Texas at Austin). DAI-A 59(06), p. 1887, Dec 1998. [AAT 9837955]

In a study of the alignment between 81 randomly selected TAAS test items and the categories in the content area, process area and level of the Standards for K-4 and 5-8, it was found that an average of 72.2% of the TAAS test items from grades 3 to 8 reflected the Standards. Recommendations for improvement follow.

Curr, Assm (EL)

Ferguson, Barbara W. (1998). *Exploring distance learning technology to enhance instruction in mathematics and science classrooms.*(Georgia State University). DAI-A 58(08), p. 3051, Feb 1998. [AAT 9804384]

Responses of teachers (n=21) on questionnaires, journals, artifacts, and interviews were used to explore the potential benefits, obstacles, and trade-offs resulting from the use of distance learning technology. Discussion and conclusions center on three core categories.

Tech, Curr (T)

Fernandez, Eileen. (1997). *Instantiating the 'standards': Describing attempts by an exceptional group of mathematics teachers to implement the NCTM 'Professional Teaching Standards'.*(The University of Chicago). DAI-A 59(05), p. 1498, Nov 1998. [AAT 9832138]

Mathematically exceptional, Standards-educated teachers (n=9) set out to determine the feasibility

of implementing the Standards vision and to describe that vision through the teachers' beliefs, classrooms and classroom uses of knowledge. Accommodating traditional and Standards-like ideas--in beliefs and practice--was found important in implementing the Standards in classrooms.
TBlf, TKnw, Tchg, Curr (T)

Figgers, Vanessa Clarise. (1997). *Influences encouraging African-American women's choice of mathematics as a career: A generational account.*(The Florida State University). DAI-A 59(05), p. 1498, Nov 1998. [AAT 9834199]

Three major categories of influences that contributed to African American women's pursuit of mathematics were found to be significant others, family values and associations, and fine arts. Other influences are also discussed.
Soc, Ethn, Gend (PS)

Finch, Curtis Ellsworth, Jr. (1997). *The effect of supplementary computer-assisted instruction upon rural seventh-grade students to improve math scores as measured by the Michigan Educational Assessment Program test.*(Walden University). DAI-A 58(08), p. 3051, Feb 1998. [AAT 9804440]

No significant difference on the posttest was found between those students who received the compressed CAI instruction (n=35) and those who did not (n=35) based on gender, time on the integrated learning system ILS, and the before- and after-school format.
CAI, Ach, Gend, Soc (MS)

Fine, Todd. (1998). *The impact of the Connecticut Mastery Test on teaching practices in a large suburban Connecticut town.*(University of Sarasota). DAI-A 59(02), p. 406, Aug 1998. [AAT 9824814]

[A survey involving 25 Likert scale statements was used to measure third-grade teacher attitudes toward the Connecticut Mastery Test (CMT). An analysis by frequency of response and percentages yields conclusions about teacher beliefs and opinions.
Tchr, TAtt, Assm (T, EL)

Fischer, Eric Mitchel. (1997). *The effects of applied technology instruction on mathematics achievement and career interests of urban seventh-grade students.*(Old Dominion University). DAI-A 58(10), p. 3821, Apr 1998. [AAT 9812376]

A randomized subjects, pretest-posttest control group design was used to assess effects of technology education curricula upon urban seventh-grade students (n=71). Significant gains in mathematics achievement were made in applying mathematical concepts and computational processes. Inferences about careers were inconsistent
Tech, Curr, Ach (MS)

Fischer, Thomas Adam. (1997). *A content analysis of United States math textbooks, 1966-1996 from a special education perspective.*(The University of Wisconsin - Madison). DAI-A 59(02), p. 455, Aug 1998. [AAT 9810351]

Content and curricular design changes in fourth-grade mathematics textbooks are investigated over three broad periods. Findings on number of instructional pages and number of topics; use of illustrations, worked-out examples, and computation skills; and emphasis on problem-solving, estimation skills, statistics are discussed.
Matl, Curr, LD (EC)

Fong, Kai-Heng. (1997). *An evaluative critique of a math program (7th through 12th grade) in a private school (seventh-grade, twelfth-grade).*(The Union Institute). DAI-A 58(09), p. 3448, Mar 1998. [AAT 9809073]

Instructional conversations of teachers with their individual students are analyzed qualitatively in this research inquiry, based upon theories of Vygotsky and the neo-Vygotskian method in examining the efficacy of the individualized mathematics program.
Lrng, Tchg, Curr (SE)

Fox, Liana Fernandez. (1998). *The effect of a graphing calculator used in an active learning environment on intermediate algebra students' achievement and attitude.*(University of South Florida). DAI-A 59(03), p. 761, Sep 1998. [AAT 9827825]

Data on students (n=166) in six classes of community college remedial algebra were collected in a quasi-experimental study. Tests, surveys, interviews, journal entries, and semester grade reports led the researcher to five conclusions regarding the appropriate use of technology.
GCal, D/R, Curr, Alg (PS)

Fox, Thomas Bernard. (1997). *Teacher change during the first-year implementation of a reform calculus curriculum in a small, rural high school: A case study.*(Illinois State University). DAI-A 58(08), p. 3051, Feb 1998. [AAT 9804931]

One teacher's practices and beliefs during her implementation of reform curriculum were compared to her previous instruction in a more traditional curriculum with the use of classroom observations, interviews, and written document data collected over a school year. Influences on the teacher's process of change are investigated.

Calc, Curr, TBlf, Tchr, Tchg (T, SE)

Franquiz, Myrna Ivette. (1998). *The effects of bilingual education on academic achievement, language development, and self-esteem of Hispanic children.*(The Florida State University). DAI-A 59(03), p. 698, Sep 1998. [AAT 9827644]

The major purpose of this study was to determine whether bilingual education programs can prove effective in increasing the Hispanic students' (n=60) knowledge, bettering language maintenance and proficiency, and fostering positive self-esteem. Higher achievement in school subjects were found in bilingual schools and higher self esteem scores were found among those who attend regular schools.

Ethn, Curr, Att, Ach (EL)

Friel, Lisa A. (1998). *Mathematical problem-solving strategies and solutions utilized by Navajo fourth-grade students.*(Northern Arizona University). DAI-A 59(03), p. 762, Sep 1998. [AAT 9826747]

The study described the problem solving strategies and solutions of the Navajo fourth grade students (n=36) and how these attributes related to the literature on Native American learning strategies and processes. Results indicate that the Navajo students approach problem solving based on their cultural upbringing.

PS, Ethn, Grpg (EL)

Fritz, Joseph James. (1997). *The relationship between two standardized mathematics tests and grades in mathematics courses.*(Wilmington College (Delaware)). DAI-A 58(07), p. 2574, Jan 1998. [AAT 9803449]

Findings of this comparative study indicate that neither the New Jersey Early Warning Test (NJEWT) nor the Comprehensive Test of Basic Skills demonstrate a substantively important relationship with ninth grade mathematics course performance (n=79).

Assm, Ach (SE)

Fuller, Kasi Caryn Allen. (1997). *With boys or without them: An exploratory study of mathematics education for girls in single-sex and coeducational high schools.*(Stanford University). DAI-A 58(07), p. 2592, Jan 1998. [AAT 9802036]

Data with respect to attitudes and experiences of mathematics and science was collected in four schools through surveys, classroom observations, interviews, analysis of archival documents, and student focus groups. The study documents attempts to find successful interventions for girls in mathematics education.

Gend, Att, Curr (HS)

Gaddis, Kelly. (1997). *Participatory mathematics curriculum development: A case study from Kwazulu/Natal, South Africa.*(Cornell University). DAI-A 58(08), p. 3052, Feb 1998. [AAT 9804964]

The study relies upon qualitative research methods and an interpretive approach and is focused on the contextualized and collaborative nature of the curriculum development process. A description of distinguishing features and aspects of the participatory approach and competing values and beliefs is given. The results point to several benefits to curriculum and to teaching.

Curr, Ethn (ALL)

Garcia, Rosangela C. (1998). *Mathematics achievement predictors for college algebra.*(Texas A&M University - Kingsville). DAI-A 59(04), p. 1101, Oct 1998. [AAT 9830375]

The following variables were considered in an effort to find the best predictor of achievement in college algebra: mathematics score on the Scholastic Achievement Test (SAT) or American College Testing (ACT), mathematics score on Texas Academic Skills Program Test (TASP), age, gender, high school GPA, high school rank, number of high school mathematics units, and high school algebra one grade. Results are described for males and for females.

Ach, Alg, Gend (PS)

Garner, Bradley Evan. (1998). *Retention of concepts and skills in traditional and reformed applied calculus.*(University of Maryland College Park). DAI-A 59(06), p. 1955, Dec 1998. [AAT 9836403]

Written tests and interviews were used to compare retention several months after completion. Students of the reformed method performed better on conceptual problems; students of the traditional method performed better on computational skills. Other differences in responses are given for traditional course and reformed course students (n=108).

Calc, Curr, Lrng, Tchg (PS)

Garza-Perez, San Juanita. (1996). *The effect of selected variables on the motivation and attitudes of urban secondary students in a large metropolitan school district.*(Texas Southern University). DAI-A 58(09), p. 3466, Mar 1998. [AAT 9810246]

Two instruments were utilized to examine the relationship among the variables ethnicity, academic status, grade level, and academic achievement motivation in mathematics and English. The effects the variables ethnicity, academic status, and grade level, separately and in combination had on obtained attitude measures of students are described.

Att, Ach, Ethn (HS)

Gavin, Mary Katherine. (1997). *A gender study of students with high mathematics ability: Personological, educational, and parental variables related to the intent to pursue quantitative fields of study.*(The University of Connecticut). DAI-A 58(08), p. 3052, Feb 1998. [AAT 9806172]

Gender similarities and differences of eighth, tenth, and twelfth grade students (n=24599) were explored with descriptive and inferential statistics, using data from the National Education Longitudinal Study of 1988.

Gend, Ach, Soc, Blf (PS)

Gentile, Maryann. (1997). *The relationship between middle school teachers' perceptions of school climate and reading and mathematics achievement.*(Widener University). DAI-A 58(12), p. 4600, Jun 1998. [AAT 9819482]

This study investigated the relationships and interactions that teachers' perceptions of school climate had on the academic achievement of students in both the reading and mathematics scores of the Pennsylvania Assessment Tests. The implications of this study are that improved teacher perceptions of climate and morale may have an important impact on the achievement levels of middle school children.

TBlf, Ach, Gend (T, MS)

George, Elizabeth Ann. (1997). *Reasoning with visual representations: Students' use of diagrams, figures, and graphs in solving problems on the advanced placement calculus examination.*(University of Pittsburgh). DAI-A 59(01), p. 113, Jul 1998. [AAT 9821248]

Students' (n=600) written solutions to problems were analyzed. Similarities and differences in the frequency of visual representation use and in the descriptions of the diagrams created are identified for subgroups of students based on gender, overall performance level on the examination, and degree of success in solving specific problems.

PS, Calc, Rep, Gend, Ach (HS)

Gilreath, Judy Ellen. (1998). *Perceptions and practices of Walker County, Georgia K-5 teachers as related to the NCTM's Professional Standards for Teaching Mathematics.*(University of Sarasota). DAI-A 59(03), p. 711, Sep 1998. [AAT 9828139]

When determining the extent to which perceptions and practices were consistent with the Standards, it was found that teachers (n=214) had a high level of agreement with the assumptions of the Standards. However, there was not a high relationship between teachers' level of agreement with the assumptions and their levels of consistency with the Standards in their teaching practices.

Tchg, TBlf, Curr (T, EL)

Ginsburg-Block, Marika Dayana. (1998). *The effects of reciprocal peer problem solving on the mathematics achievement, academic motivation and self-concept of 'at risk' urban elementary students.*(University of Pennsylvania). DAI-A 59(04), p. 1066, Oct 1998. [AAT 9829905]

Measures of computation, problem solving, academic motivation, academic competence, and social competence were used to compare reciprocal peer problem solving (RPPS), problem solving only (PS), reciprocal peer tutoring only (RPT), and control methods. Significant differences in students' (n=104) scores and implications for urban settings are discussed.

PS, Ach, Att, Soc, Curr (EL)

Gober, Deborah Ann. (1998). *Four preservice secondary mathematics teachers and the complexities of gender-equitable instruction.*(University of Georgia). DAI-A 59(06), p. 1955, Dec 1998. [AAT 9836957]

Observation, interview, and journal data on preservice teachers' (n=4) beliefs were analyzed using Paine's categories of orientations toward diversity and with Ernest's ideologies of mathematics education. Changes in beliefs and practices are described.

TBlf, Gend, Eqty, Prsv (TE, SE)

Godfrey, Ann Cummins. (1998). *Gender related differences in attitudes and achievement in the learning of mathematics.*(The University of Alabama). DAI-A 59(05), p. 1499, Nov 1998. [AAT 9833664]

The purpose of the study was to determine if there are gender differences in attitudes and achievement in mathematics at the college level. Data collected on college students in three studies (n=384; 604; 79) seem to support the assumption that attitudes toward mathematics for females are improving.

Gend, Att, Ach (PS)

Golley, Priscilla Sue. (1997). *An investigation of teachers' perceptions and implementation of interdisciplinary mathematics and science.*(Georgia State University). DAI-A 58(08), p. 3071, Feb 1998. [AAT 9804386]

For this study high school science and mathematics teachers (n=4) developed and implemented an interdisciplinary project related to the concept of sound. Through this project observations were made in regard to construction process, teacher beliefs, and concerns.

IC, TBlf, Rep, Lang, PS (HS)

Goodrow, Anne M. (1998). *Children's construction of number sense in traditional, constructivist, and mixed classrooms.*(Tufts University). DAI-A 59(04), p. 1055, Oct 1998. [AAT 9828874]

Interviews and assessment tasks were used to compare three mathematics curricula. Results are described in terms of comparisons of second-grade students' (n=30) computing ability, flexibility in use of strategies, dependence on standard procedures, and understanding of part-whole relationships and of place value.

Lrng, Curr, NSns (EC)

Gradone, Jeanne Marinaro. (1997). *Social capital as a mitigator of the effects of low socioeconomic status on achievement and postsecondary education.*(Fordham University). DAI-A 58(09), p. 3379, Mar 1998. [AAT 9809008]

Survey information and standardized test scores from the National Education Longitudinal Study of 1988 were used to examine the effect of social capital. Results suggest that schools as social structures can influence students to achieve and continue formal education beyond high school.

Soc, Ach (HS, PS)

Graham, Julie Ann Haenfler. (1997). *The development and validation of a computer delivered diagnostic test of addition and subtraction of fractions for remedial college students.*(The University of Iowa). DAI-A 58(12), p. 4591, Jun 1998. [AAT 9819943]

College students (n=50) were administered the computer test, a comparable written test, and an attitude survey. The computer test took more time to complete than the written test, but the computer test provided immediate feedback, diagnoses, and showed promise as a viable diagnostic tool.

Assm, D/R, Mscn, Comp, Frac, A/S (PS)

Graham, Teresa Alice. (1998). *Communication development in inquiry-based secondary mathematics classroom cultures.*(Kent State University). DAI-A 59(05), p. 1499, Nov 1998. [AAT 9835413]

This case-study of algebra students (n=6) explored how the classroom culture and students' ability to communicate mathematically and use the formal language of mathematics were reflexively related. External and internal factors that supported student interaction are presented.

Comm, PS, Lrng, Clln (SE)

Grant McLoughlin, John Francis. (1997). *Exploring students' perceptions of mathematics through the context of an undergraduate problem-solving course.*(State University of New York at Buffalo). DAI-A 58(07), p. 2574, Jan 1998. [AAT 9801295]

College students (n=12) participated in a mathematics class that featured journal writing, problem sets, autobiographical sketches, investigations, tests, and presentations, and a pedagogical method known as convening. Subjects completed this course with different mathematical views than those with which they entered.

PS, Tchg, Blf, Aff (PS)

Gray, Derek John. (1997). *Mathematics and science in South Africa: An international achievement study at junior secondary level.*(University of Pretoria (South Africa)). DAI-A 58(11), p. 4214, May 1998.

This study examines the contexts in which TIMSS was conducted in South Africa and the educational 'climate' of restructuring in which the testing program was implemented. A national picture of mathematics and science achievement in South Africa at junior secondary level is presented.

Assm, Soc, Curr (MS)

Gregorio, Lynne Croteau. (1998). *Procedural and conceptual knowledge of median among inservice elementary and preservice middle school teachers.*(North Carolina State University). DAI-A 59(03), p. 762, Sep 1998. [AAT 9825994]

Results of an open-ended assessment indicate that elementary teachers (n=55) view median as middle, midpoint, mean, or mode. Interviews with preservice middle school teachers (n=13) yielded various strategies such teachers use to find median. Recommendations for teaching statistics are given.

Stat, TKnw, Prsv (T, TE, EL)

Hackett, Linda Diane. (1998). *The effects of writing in an applied calculus course: An analysis of performance and errors.*(The American University). DAI-A 59(03), p. 762, Sep 1998. [AAT 9826673]

The performance on a departmental final of students who wrote about their errors and misconceptions in complete sentences using correct mathematical terminology was compared to that of students who did not write in complete sentences about their errors and misconceptions. Significant differences are explained.

Calc, Writ, D/R (PS)

Hall, Arlene Mildred. (1997). *The effects of a homework station on the completion of math homework for middle school students.*(Purdue University). DAI-A 59(01), p. 114, Jul 1998. [AAT 9821754]

A homework station was designed for students nominated by their teachers for inattention and high activity. Three students and their parents were trained in the use of the homework station in their individual homes. Two students tripled the amount and accuracy of homework completed.

Aff, Ach, L/D (SE)

Hall, Kathryn Sarah. (1997). *An empirical analysis of the relationship between hours in general education and the academic and behavioral outcomes of students with learning disabilities.*(University of South Florida). DAI-A 58(08), p. 3084, Feb 1998. [AAT 9803881]

The relative contribution of IQ, socioeconomic status, age, attendance, and hours in general education in the prediction of academic and behavioral outcomes of students (n=89) identified as having specific learning disabilities was examined. Results describe influences on students' reading and mathematics achievement and behavior.

LD, Ach, Lrng, Soc (Not given)

Hall, Linda R. (1997). *Mathematics and science achievement in adolescence: The effects of life course goals and self-concept.*(University Of Toronto (Canada)). MAI 36(06), p. 1447, Dec 1998. [AAT MQ28710]

Individual and combined effects of academic and social life course goals and academic, social, and mathematics self-concept on mathematics and science achievement are examined as a function of grade, sex, and educational class condition (n=522).

Ach, Aff, Gend, Soc (HS)

Haller, Susan Kathryn. (1997). *Adopting probability curricula: The content and pedagogical content knowledge of middle grades teachers.*(University of Minnesota). DAI-A 58(07), p. 2606, Jan 1998. [AAT 9738434]

This study describes middle grades teachers' (n=35) growth in probability knowledge as they participated in a summer institute and documents the impact of teachers' (n=4) probability knowledge and teaching experience on probability instruction as they implemented new probability curricula.

Insv, Prob, TKnw, Curr (T, MS)

Hardaway, Joyce Ann Eskridge. (1997). *The impact of the semestered block schedule on mathematics achievement in Chattanooga City and Hamilton County schools.*(Tennessee State University). DAI-A 59(01), p. 114, Jul 1998. [AAT 9821870]

This study addressed the effect of the semestered block schedule on the achievement of high school students in the areas of Prealgebra, Algebra I, Algebra II, Unified Geometry, and Mathematics for Technology. The study also examined teachers' (n=69) perceptions of student achievement and their own staff development as preparation for block scheduling.

Curr, Ach, Alg, TBlf, Insv (HS)

Hardin, William James. (1997). *Comparison of four instructional approaches and mathematics background on students' conception of limits.*(Syracuse University). DAI-A 59(01), p. 114, Jul 1998. [AAT 9821614]

This dissertation examines how different ways of teaching the concept of limits affect students' conceptions of limits as well as their computational proficiency. Four treatments, paper-and-pencil computational, graphics calculator-based, paper-and-pencil conceptual, and computer-based, were compared to determine their different effects.

Calc, GCal, CAI, Curr, Mtcg (PS)

Harijati, Asri. (1998). *The in-school factors that influence students' academic achievement in Indonesian junior high schools.*(University of Pittsburgh). DAI-A 59(06), p. 1849, Dec 1998. [AAT 9837496]

Multiple regression analysis is employed to measure the contribution of in-school factors on Indonesian language and mathematics. The variables that significantly explain the variability of student mathematics achievement are instructional material, instructional media, library condition, library usage, teacher experience, teacher inservice short-term training and teacher inservice long-term training.

Ach, Ethn, Soc (MS)

Harrington, James Edward. (1998). *The effect of cognitively-oriented experiences in the formation of the function concept for undergraduate mathematics students.*(State University of New York at Albany). DAI-A 59(04), p. 1102, Oct 1998. [AAT 9830199]

A quasi-experimental pretest-posttest design was used to study the effects of procedural and conceptual course materials on the acquisition of the modern structural definition of a function. Post hoc analysis revealed that the significant differences were between the high formal and transitional thinkers and also between the low formal and transitional thinkers.

Matl, Lrng, Calc, Curr (PS)

Harris, William David. (1998). *Moral education and mathematics: Integrating the curriculum.*(California State University, Dominguez Hills). MAI 36(05), p. 1221, Oct 1998. [AAT 1389212]

A project on conducting a survey to investigate the extent of cheating that occurs in the school and community demonstrates how mathematics and moral education can be integrated into a single unit of instruction for middle school students.

IC, Aff (MS)

Hartl, Kathleen Dee Wangsness. (1997). *A study of initial and continued success of students in mathematics courses at Northeast Iowa Community College as related to scores on ASSET assessment.*(The University of Iowa). DAI-A 58(08), p. 3052, Feb 1998. [AAT 9805675]

This study evaluated the success in initial and subsequent mathematics courses of community college students (n=3508) in relation to selected variables including their ASSET scores. The research focused on the performance of students who followed college recommendations for initial mathematics and those who did not follow the recommendations.

D/R, Assm, Arth, Knw (PS)

Hassani, Sarah. (1998). *Calculus students' knowledge of the composition of functions and the chain rule.*(Illinois State University). DAI-A 59(05), p. 1499, Nov 1998. [AAT 9835906]

Exams and interviews were used to examine students' understanding of concepts from graphical, numerical (tabular), and algebraic/symbolic points of view. Results show that students have a very meager understanding of the concepts.

Calc, Knw, Alg (PS)

Hauge, James Brian. (1998). *Assessment of an outreach program for eighth-grade science students: Measurement of affective and cognitive gains.*(Auburn University). DAI-A 59(05), p. 1514, Nov 1998. [AAT 9835336]

Effects of the College of Sciences and Mathematics Science Outreach (COSAM) Initiative were measured by surveys, grades, SAT and OLSAT scores, and enrollment in kinds of science and mathematics courses of participants (n=48) as compared to non-participants (n=43). No significant effects were detected for school grades, standardized test scores, or increased course participation.

Curr, Assm, Lrng, Aff (MS)

Haver, Deborah Ann Todd. (1997). *Concerns of secondary mathematics teachers in Virginia and their levels of use in implementing the National Council of Teachers of Mathematics Standards.*(The George Washington University). DAI-A 58(08), p. 3053, Feb 1998. [AAT 9806401]

Questionnaires and interviews were used to determine the concerns and needs of secondary mathematics teachers. Questionnaire results showed that teachers have relative high intensities of concerns towards implementing the NCTM Standards. Interview findings revealed the breath and depth of implementation differed among teachers.

Curr, Tatt, TBlf (T, SE)

Hazelbaker, Deborah Jean. (1997). *A comparative study examining the effects of alternative methods of teaching mathematics on mathematics achievement and attitudes towards mathematics: Comparing the lecture/ cooperative learning method to the computer-assisted method.*(The Union Institute). DAI-A 58(08), p. 3053, Feb 1998. [AAT 9804170]

Two classes of elementary teachers in a small private college were studied. Students who participated in the cooperative learning class outperformed students in the computer-assisted class on posttest achievement scores. A higher percentage of the cooperative learning students had improved attitudes.

CAI, Prsv, Grpg, Ach, TAtt, Curr (TE, EL)

Heavey, Joyce Marie. (1998). *The effects of integrating literature and mathematics.*(Fairleigh Dickinson University). MAI 36(05), p. 1226, Oct 1998. [AAT 1389236]

This review examines the integration of mathematics and literature. Mathematics Literature has been an extremely successful vehicle for attaining NCTM goals of increasing relevance and application of mathematics. Benefits and teacher roles are reviewed.

IC, Lang (Not given)

Hecht, Steven Alan. (1997). *Toward an information processing account of individual differences in fraction skills.*(The Florida State University). DAI-A 58(07), p. 2575, Jan 1998. [AAT 9802194]

The goal of this paper was to examine the contributions of three families of mathematical knowledge on individual differences in fraction skills. The study examined procedural and conceptual knowledge, in addition to their association.

Arth, Frac, Ach, Lrng (EL)

Hernandez Garduno, Edna Leticia. (1997). *Effects of teaching problem-solving through cooperative learning methods on student mathematics achievement, attitudes toward mathematics, mathematics self-efficacy, and metacognition.*(The University of Connecticut). DAI-A 58(08), p. 3053, Feb 1998. [AAT 9806174]

Seventh and eighth grade male and female students participated in a two-week course on problem solving in probability and statistics. Two experimental groups were taught through cooperative learning. The control group was taught using whole-group instruction in which competition and individual work was stressed.

PS, Mtcg, Grpg, Ach, Att, Prob, Stat, Gend (SE)

Hollaway, David Patrick. (1998). *Computer-assisted instruction: The effects of an authentic learning application in elementary mathematics.*(California State University, Dominguez Hills). MAI 36(05), p. 1227, Oct 1998. [AAT 1389347]

The effects of Basketball Math software were measured by a pretest, a posttest, and an affective test given to fifth graders (n=26). It is concluded that CAI is beneficial to the mathematics curriculum and provides a strong medium for a student's mathematical development.

CAI, Lrng, Aff (EL)

Hollstein, Kurt August. (1996). *The relationship between a contextually based mathematics curriculum and the mathematics achievement of high school students.*(Wilmington College (Delaware)). DAI-A 59(06), p. 1971, Dec 1998. [AAT 9838574]

Results on two unit posttests which tested efforts to meet NCTM reform movement in mathematics education revealed that students in a traditional-based curriculum group (n=309; 327) scored significantly higher than students in a contextual-based curriculum group (n=86; 70).

Curr, Alg, Ach, Patt (HS)

Houghton, Peggy M. (1997). *Relationship of the modular mathematics delivery system to the successful completion of the next sequential mathematics course.*(Walden University). DAI-A 58(12), p. 4541, Jun 1998. [AAT 9819454]

The study examined a modular developmental mathematics program designed and implemented to better prepare students for subsequent mathematics courses. This study compared the success rate of students in the modular program with those who took the older, conventional developmental program.

D/R, Curr, Ach (PS)

Howald, Carol Lynn. (1998). *Secondary teachers' knowledge of functions: Subject matter knowledge, pedagogical content knowledge, and classroom practice.*(The University of Iowa). DAI-A 59(05), p. 1500, Nov 1998. [AAT 9834470]

According to data collected on content and pedagogical content knowledge of teachers (n=20), practicing teachers had a better understanding of functions than did preservice teachers. Further case studies (n=2) yield three grounded hypotheses which describe the impact of teacher content knowledge and conceptions on classroom teaching.

TKnw, Alg, Tchg (T, SE)

Hughes, Glen Marshall. (1998). *Kansas public school mathematics standards: State mandates, NCTM recommendations, and teacher preparation institutions.*(Kansas State University). DAI-A 58(11), p. 4140, May 1998. [AAT 9817150]

Faculty members' and graduate assistants' use of real-world applications, use of technology, emphasis on selected topics, and emphasis on areas of pedagogy and curriculum areas in teacher-preparation programs (n=22) were compared to NCTM Standards recommendations. Degrees of alignment and reasons are offered.

Prsv, Curr, Tchg (T, PS)

Hunter, Curtis T. L. (1994). *A study of the effect of instructional method on the reading and mathematics achievement of chapter one students in rural Georgia.*(South Carolina State University). DAI-A 58(08), p. 2985, Feb 1998. [AAT 9806665]

The effectiveness of an Integrated Instructional System (IIS), the Jostens Learning System in particular, was measured with a pretest-posttest control-group design (n=210). Significant differences in achievement scores between the experimental and control groups of Chapter One students at each grade level (second through eighth) were found.

Curr, Ach (EL)

Huntley, Mary Ann. (1997). *Integrated mathematics and science education in the middle grades: Theory and practice.*(University of Maryland College Park). DAI-A 58(09), p. 3449, Mar 1998. [AAT 9808616]

This study examines the ill-defined nature of the phrase integrated mathematics and science education, and presents a conceptual framework to lend clarity and precision. Two case studies examine the beliefs of teachers of integrated mathematics and science, and document classroom practices.

IC, Curr, Impl (MS)

Hyde, Michelle Smoot. (1997). *A case study of undergraduate female students majoring in math, science and engineering: An analysis of persistence and success.*(The University of Utah). DAI-A 58(10), p. 3856, Apr 1998. [AAT 9812969]

The study identifies and attempts to understand critical factors within the academic environment of science that contribute to female persistence in mathematics, engineering and science disciplines at a large research institution.

Gend, IC, Aff, Ach (PS)

Hylton-Lindsay, Althea Antoinette. (1997). *The effect of the graphing calculator on metacognitive aspects of student performance in pre-calculus for business.*(Columbia University Teachers College). DAI-A 58(09), p. 3449, Mar 1998. [AAT 9810960]

This study examines the effects of graphing calculators on thought processes, self-regulation, interest in mathematics, beliefs, attitudes, and achievement in mathematics among precalculus for business students as they problem solve.

Aff, GCal, Mtcg, Calc, Ach, Blf, PS (PS)

Itterly, Kathleen C. (1998). *Transference of teaching and learning theories and practices from* *literacy to mathematics in elementary education.*(University of Massachusetts). DAI-A 59(02), p. 421, Aug 1998. [AAT 9823744]

The purpose of this qualitative case study was to examine whether the theories and practices of learner-centered teaching in literacy transfer to mathematics during the implementation of a new constructivist mathematics curriculum. Each second grade teacher (n=2) transferred aspects of the Learning Network model into her practices, but the depth of transfer differed.

Lrng, Tchg, Curr, Tchr (T, EL)

Jackson, Jeanetta Williams. (1997). *Factors affecting students' learning of new mathematics concepts in three Nashville area remedial and developmental studies mathematics programs.*(Tennessee State University). DAI-A 58(08), p. 3053, Feb 1998. [AAT 9806338]

This is a correlation study (n=116) of factors which research suggests affect students' performance in mathematics: mathematics anxiety, gender, prior mathematics preparation, the level of the concept to be learned, the teacher, mastery of prior skills, and the student's mastery of a new mathematics concept.

D/R, Knw, Anx, Gend, Tchr (PS)

Jasper, William Allen. (1997). *Self-confidence and work effort as predictors of achievement in junior high school mathematics courses.*(Texas A&M University). DAI-A 58(11), p. 4214, May 1998. [AAT 9815762]

The purpose of this study was to determine the relationships of self-confidence, actual work effort as measured by homework completion rates, and the perceived importance of effort with mathematics achievement at the junior high school level (n=120) paying close attention to gender differences.

Att, Blf, Ach (MS)

Jensen, Judith A. (1997). *Gender differences in the relationship of attitudinal and background factors to high school students' choice of math-intensive curriculum and careers.*(Northern Illinois University). DAI-A 58(08), p. 3000, Feb 1998. [AAT 9805175]

A national probability sample of approximately 2,900 high-school students, their parents, and their school principals responded to surveys on various constructs to address three purposes. Results on gender-specific factors and SES are discussed.

Gend, Att, Soc, Aff (HS)

Johari, Abbas. (1998). *Effects of inductive multimedia programs on creation of linear function and variable conceptualization.*(Arizona State University). DAI-A 59(03), p. 713, Sep 1998. [AAT 9828186]

Students' (n=98) achievements on 12-item, short answer, pre- and posttests were used to compare two treatments: an inductive table-only program and an inductive table-and-graph program. Results suggest using inductive multimedia program treatments that incorporate many instructional strategies.

MMed, Alg, PS, Curr (PS)

Johns, Gregg Allen. (1997). *The effects of interspersing brief and easy problems on choice of mathematics tasks.*(Mississippi State University). DAI-A 58(12), p. 4555, Jun 1998. [AAT 9818688]

The focus of the study was to examine the utility of a mathematics computer program that presented concurrent instructional level mathematics assignments in a manner consistent with previous matching law research. The study was conducted in a classroom with subjects (n=4) with specific learning disabilities in mathematics.

CAI, LD, Tchg (HS)

Johnson, Arthur Vincent, II. (1997). *Enlargement tasks to assess adolescents' knowledge of similarity and area relationships.*(Boston University). DAI-A 58(07), p. 2575, Jan 1998. [AAT 9802241]

The purpose of the study was to assess abilities to enlarge plane geometric figures on the basis of scale factors of their areas. Subjects constructed enlargements with both paper-and-pencil and a software program and provided descriptions of their solution methods. They ranked their confidence that their solutions were correct.

Meas, Aff, Comp, Geom (SE)

Johnson, Eileen Susan. (1998). *An exploration of the relation between mathematics achievement and factors of intelligence.*(University of Houston). DAI-A 59(03), p. 724, Sep 1998. [AAT 9828320]

The research questions focused on crystallized (Gc) versus fluid (Gf) intelligence as proposed by Horn and Cattell and achievement in mathematics applications. Results indicate that Gc and Gf intelligence do not differentially predict achievement in mathematics applications among students (n=299) referred for special education testing.

Ach, LD, Lrng, Lrnr (Not given)

Jones, Joffrey Philip. (1998). *Perceptions of the Ohio ninth-grade proficiency test among non-passing students, parents, and educators.*(Kent State University). DAI-A 59(06), p. 1851, Dec 1998. [AAT 9835594]

A qualitative study of 27 participants at three levels led to the identification of six participant domains: (1) opinions about the proficiency test and policy, (2) reasons for the tests, (3) how schooling has changed, (4) the profile of the non-passing students, (5) student preparation for the tests, and (6) what non-passing students would do differently.

Assm, Ach (HS)

Jones, Kenneth Lee. (1997). *The effects of the use of graphing calculator on learning disabled students' achievement and attitudes in a university finite mathematics course.*(The American University). DAI-A 59(02), p. 438, Aug 1998 . [AAT 9825806]

The study investigates whether learning disabled students in the study have preferences for various representations, to what extent are preferences contextually related, did the use of the graphing calculator result in more positive attitudes, and were the students who used the graphing calculator more likely to enroll in more advanced mathematics courses?

GCal, Rep, Att, Ach, LD, Curr (PS)

Jones, Tanya Maria. (1997). *The effects of the Louisiana Systemic Initiative project on two rural school districts in Louisiana.*(The Louisiana State University and Agricultural and Mechanical College). DAI-A 59(01), p. 73, Jul 1998. [AAT 9820727]

This study describes the sites and classroom interactions, and teachers' perceptions of the change. Findings reflected that teachers were implementing the initiative in the classroom and were primarily using manipulatives, open-ended questions, and cooperative learning groups. Teachers and principals render a key role in the implementation of reform.

Curr, Tchg, TBlf, Manp, Grpg (K-12)

Joshi, Hemanta. (1997). *Determinants of mathematics achievement using structural equation modeling.*(University of Alberta (Canada)). DAI-A 58(10), p. 3899, Apr 1998. [AAT NQ23000]

The main purpose of the study was to assess the mathematics achievement of secondary level students in the Kathmandu Valley of Nepal and to examine the factors that influence this achievement using structural equation modeling with LISREL. Data were collected from 24 private and public schools from urban and rural locations using six different instruments.

Ethn, Ach, Curr, Assm (SE)

Kalchman, Mindy Susan. (1997). *Teaching functions in the elementary years: A developmental approach.*(University Of Toronto (Canada)). MAI 36(06), p. 1447, Dec 1998. [AAT MQ28712]

Possibilities of teaching functions to two groups of grade six students (n=20) using a developmental approach was investigated. Pretest and posttest measures indicate that students in an experimental curriculum improved significantly.

Alg, Curr (EL)

Kamalvand, Ahmad. (1997). *A combination of cognitive and noncognitive predictors of achievement in college algebra in a predominately black college.*(The University of Texas at Austin). DAI-A 59(02), p. 438, Aug 1998. [AAT 9824987]

This study was a replication of a 1995 investigation of the predictive relationship between noncognitive variables, admission test scores, high school curriculum, and subsequent achievement in introductory college mathematics (n=181).

Ach, Aff, Ethn, Att, Alg, Curr (PS)

Kanemoto, Amy E. (1998). *Effects of math manipulatives on students learning place value.*(California State University, Long Beach). MAI 36(05), p. 1227, Oct 1998. [AAT 1390126]

A quasi-experimental, pretest-posttest design was conducted with two fourth grade classes to examine use of manipulatives. No significant difference was found in mathematics' achievement between experimental (n=26) and control (n=25) groups on the post-test scores.

Manp, PlcV (EC)

Keiser, Jane Marie. (1997). *The development of students' understanding of angle in a non-directive learning environment.*(Indiana University). DAI-A 58(08), p. 3053, Feb 1998. [AAT 9805420]

A study of two sixth-grade classes using the Shapes and Designs unit from the Connected Mathematics Project. Results revealed that students' understandings of angle concepts are disconnected and fragile. Students tend to focus on one of three aspects--the angle's vertex, its rays, or its interior region.

Geom, Mscn, Curr, Matl, Lrng (MS)

Kelly-Begin, Ghislaine. (1997). *Etude exploratoire d'une methodologie metaphorique de diagnostic des erreurs epistemologiques et de changement conceptuel dans les mathematiques des nombres entiers relatifs.* [Title in English: An exploratory study of a metaphorical method of diagnosing epistemological errors and conceptual change in the mathematics of whole numbers].(University of Ottawa (Canada)). DAI-A 59(02), p. 439, Aug 1998. [AAT NQ26128]

Formative interventions of a metaphorical/ analogical nature proved successful for correcting epistemological errors and effecting conceptual change with tenth-year students at both general (n=22) and advanced (n=21) levels.

Phil, Blf, Tchg, Lrng, D/R, Mscn (SE)

Kersaint, Gladis. (1997). *Preservice elementary teachers' ability to generalize functional relationships: The impact of two versions of a mathematics content course.*(Illinois State University). DAI-A 59(05), p. 1500, Nov 1998. [AAT 9835911]

A traditional approach and a function-based approach were compared and used to examine students' procedural and conceptual understandings. Qualitative and quantitative data are analyzed. Sfard's (1991) model of conceptual development was used as a lens to interpret the students' conceptual understandings. Students from both classes performed similarly.

Prsv, Alg, Lrng (TE, EL)

Kett, James Robert. (1997). *A portrait of assessment in reformed mathematics classrooms.*(Western Michigan University). DAI-A 58(12), p. 4591, Jun 1998. [AAT 9817117]

This research documents the assessment practices of four Core-Plus Mathematics Project teachers working in 9th and 10th grade classrooms with diverse student populations. This information should prove useful as the research community develops assessment models consistent with a constructivist theory of learning.

Assm, Rsch, Curr, Comm, Matl, Lrng, Tchg (HS)

Khalid, Mohd Nasir. (1997). *Factors affecting mathematics achievement in Malaysian schools.*(Indiana University). DAI-A 58(09), p. 3449, Mar 1998. [AAI9810760]

Confidence, socioeconomic status, gender beliefs, attribution of success to a teacher, motivation, enjoyment, peers, location of school, school environment, ethnicity beliefs, and previous achievement in mathematics were significant predictors of mathematics achievement in Malaysian schools.

Ethn, Aff, Soc, Ach, Anx, Blf (SE)

King, Helen Johnson. (1997). *Effects of computer-enhanced instruction in college level mathematics as determined by a meta-analysis.*(The University of Tennessee). DAI-A 59(01), p. 114, Jul 1998. [AAT 9823096]

The study sought to answer 12 research questions related to the effects of CEI on conceptual, procedural, and overall achievement. Thirty studies collected from dissertations, journal articles and a manuscript accepted for publication fit the criteria for inclusion in the meta-analysis.

CAI, Revw, GCal, M/CBL, Lrng (PS)

King, Karen Denise. (1997). *Instructor decision-making in reform-oriented undergraduate mathematics classes.*(University of Maryland College Park). DAI-A 58(09), p. 3449, Mar 1998. [AAT 9808627]

This study was a qualitative inquiry into the actions and decision making of two reform-oriented college instructors, conducted through classroom observations, stimulated recall interviews, journaling and student assessment.

Curr, Tchg, Clln, Lrng, Knw, Rep, Assm (PS)

King, Michael John. (1998). *The effects of frequency of technology use on high school students' mathematics and science achievement.*(University of Houston). DAI-A 59(03), p. 778, Sep 1998. [AAT 9828323]

Student (n=11000) survey data from NELS:88 were analyzed to determine how the frequency of technology use impacts mathematics and science test scores. Four data sets (calculator/mathematics, calculator/science, computer/mathematics, computer/science) yield significant results.

Cltr, Comp, Ach (HS)

Koellner, Karen Anne. (1998). *Children's multiplicative schemes in the operator subconstruct of rational number.*(Arizona State University). DAI-A 59(06), p. 1905, Dec 1998. [AAT 9836601]

An interpretive qualitative study was conducted with seventh grade students (n=4) to describe their conceptualizations of the operator subconstuct while focusing on their ability to unitize, partition, and reason proportionally. Levels of sophistication in students' abilities, solutions, and strategies are discussed. Context of the problems was a critical factor.

Frac, NSns, RaPc, PS (MS)

Lang, Frances Kuwahara. (1998). *A comparison of high-achieving and under-achieving underrepresented students of color in mathematics.*(The Claremont Graduate University). DAI-A 59(04), p. 1102, Oct 1998. [AAT 9830352]

The cultural, personal, school, and popular culture factors that account for the disparity in mathematics achievement between high-achieving students within an ethnic group and their underachieving counterparts were examined. From those findings recommendations to narrow the disparity are given.

Ethn, Ach, Gend (PS)

Langston, Barbara Hope. (1997). *A mathematical case study of a seventh grade teacher and her students how learning logs reveal the connections between conceptual and procedural knowledge.*(University of South Carolina). DAI-A 58(11), p. 4215, May 1998. [AAT 9815520]

The purpose of this study was to discover what can be learned by a teacher and her students as students communicate thinking and understandings in learning logs. Student responses were analyzed with respect to the forms of communication used and the kinds of understandings revealed.

Comm, Writ, Lrng, ClIn (MS)

Langston, Jean Barnett. (1997). *The relationship between self-efficacy and TAAS performance in high school students.*(University of Houston - Clear Lake). MAI 36(03), p. 672, Jun 1998. [AAT 1387996]

Students (n=81) representing a variety of skill levels were examined to determine the relationship of self-efficacy and performance on a standardized test which students must pass in order to graduate. Results showed that a significant relationship exists between self-efficacy and TAAS performance.

Att, Ach, Assm (HS)

Lawrence, Frank Robert. (1998). *Cross-domain modeling of pre-engineering mathematics and history grades.*(Auburn University). DAI-A 59(05), p. 1541, Nov 1998. [AAT 9835344]

An example of the cross-domain growth model used to analyze individual (n=868) change in multiple dimensions simultaneously is provided. The final, two-level, cross-domain model demonstrated that student growth in both science and liberal arts contributes significantly to student success.

Ach, Soc (PS)

Leggett, Jowava Morrow. (1997). *Linked case studies of the dissemination of the emerging scholars programs in three community colleges.*(The University of Texas at Austin). DAI-A 59(01), p. 67, Jul 1998. [AAT 9822644]

The goal of Emerging Scholars Programs at four-year institutions is to encourage underrepresented minority students to seek careers in mathematics by focusing on students' strengths. This study focused on the perceived need for the ESP, how dissemination occurred, the role of faculty and administrators in implementing the program, and the results.

Ethn, D/R, Impl, Ach, Aff (PS)

Lei, Qingwen. (1998). *The effects of input format on simple multiplication of Chinese- and English-speaking adults.*(Carleton University (Canada)). MAI 36(05), p. 1223, Oct 1998. [AAT MQ26961]

Adults who had learned arithmetic in the People's Republic of China (n = 32) are compared to those of Canada (n = 32) on multiplication facts recall in Arabic digit or auditory format. Results are discussed in relation to predictions based on current models of numerical cognition and effects of input format.

CC, Arth (PS)

Leonard, Jacqueline. (1997). *Characterizing student discourse in a sixth-grade mathematics classroom.*(University of Maryland College Park). DAI-A 58(09), p. 3450, Mar 1998. [AAI9808633]

The teacher-researcher used quantitative research methods to compare and contrast target students' participating behaviors. The qualitative research study examined the influence of three types of task environments on student involvement and discussion.

ClIn, Comm, Tchg, Tknw (MS)

Leonard, John Denes. (1997). *Mathematics reform and the affective domain: Implementing reform at one high school.*(University of California, Los Angeles). DAI-A 58(09), p. 3406, Mar 1998. [AAT 9807614]

Using questionnaires, this study examined the attitudes of two groups of students, one assigned to a traditional curriculum beginning with Algebra 1 and the other assigned to the beginning of the reform curriculum, Integrated Mathematics 1. Teachers expressed feelings of anxiety at producing a reform curriculum daily.

Att, Curr, IC, Aff, TAtt, GCal (HS)

Leslie, Awanna Veselle Lowe. (1998). *The effects of an after-school tutorial program on the reading and mathematics achievement, failure rate, and discipline referral rate of students in a rural middle school.*(University of Georgia). DAI-A 59(06), p. 1853, Dec 1998. [AAT 9836330]

Results of comparing students who participated in a tutoring program to a comparable group revealed a significant difference in reading and a reduction in failures. There was no significant difference in mathematics and in discipline referral rates.

Curr, Ach, Soc (PS)

Lightner, Stanley Lee. (1997). *A comparison of the effectiveness of applied and traditional mathematics curriculum.*(Oklahoma State University). DAI-A 58(08), p. 3103, Feb 1998. [AAT 9806559]

This study investigated General Mathematics and Applied Mathematics 1 in three rural comprehensive secondary schools (n=151). The research question was, are there significant differences in the gains in the total mathematics scores, in the calculation of whole numbers, fractions, decimals, percentages, mixed operations, measurements, or in the estimation of mathematics answers.

D/R, Est, Arth, Curr, Decm, Frac, RaPc (SE)

Lim, Brian Sukdo. (1998). *Factors associated with Korean-American students' mathematics achievement.*(University of Washington). DAI-A 59(06), p. 1955, Dec 1998. [AAT 9836208]

A questionnaire and a standard test was used to investigate the associations between various background factors of Korean-American students (n=71) and the students' mathematics achievement in problem-solving and computation.

PS, Soc, Ethn (HS)

Lindboe, Theresa Ann. (1998). *The effectiveness of peer instruction in the learning environment of low-achieving undergraduate mathematics students.*(Columbia University Teachers College). DAI-A 59(06), p. 1938, Dec 1998. [AAT 9839090]

Peer instruction was used as an alternative method of learning algebra. Evidence based on data from the observations, audio tape recordings of the students' lessons, pretests, posttests, student surveys, and peer instructor questionnaires supports the effectiveness of peer instruction.

Lrng, Tchg, Alg, Ach (PS)

Liou-Mark, Janet. (1998). *Exploring the math achievement patterns of Asian-Americans in the tenth grade.*(New York University). DAI-A 58(12), p. 4591, Jun 1998. [AAT 9819869]

Difference in mathematics achievement patterns of students (n=598) from among the five Asian-American ethnic groups were investigated, taking into account seven other variables. Results and interactions of variables are described.

Ethn, CC, Ach, Soc (HS)

Lowery, Maye Norene Vail. (1998). *Construction of teacher knowledge in context: Preparing elementary teachers to teach mathematics and science.*(Texas A&M University). DAI-A 59(04), p. 1127, Oct 1998. [AAT 9830954]

Qualitative methodology was used to study how preservice teachers construct teacher knowledge and pedagogical content knowledge and to determine the extent of that knowledge in a school-based setting. A mega system for the construction of teacher knowledge is revealed in the final analysis.

Prsv, TKnw, Tchg, Lrng (TE, EL)

Luebeck, Jennifer Lyn. (1998). *Distance-mediated mentoring: A telecommunication-supported model for novice rural mathematics and science teachers.*(Montana State University). DAI-A 59(04), p. 1102, Oct 1998. [AAT 9830114]

A qualitative research design was used to pursue four purposes related to rural novice teachers' (n=9) and their mentors' use of an innovative distance-mediated mentoring program. Categories of communication, impacts on teaching, and causes of professional growth are identified.

Tech, Comm, Insv, Tchg (T)

Maccini, Paula. (1998). *Effects of an instructional strategy incorporating concrete problem representation on the introductory algebra performance of secondary students with learning disabilities.*(The Pennsylvania State University). DAI-A 59(06), p. 1978, Dec 1998. [AAT 9836718]

Results indicate that the ability of secondary students with LD to apply problem solving skills involving integer numbers and strategy use dramatically improved following instruction at the concrete, semiconcrete, and abstract level with the use of Algebra Lab Gear.

Alg, LD, Tchg, PS, Int (HS)

Maine, Karen Suzanne. (1998). *The effects of a parent and student portfolio assessment program on attitude and achievement in seventh grade mathematics.*(California State University, Dominguez Hills). MAI 36(05), p. 1227, Oct 1998. [AAT 1389213]

Assessment forms, journals, pre and post tests, and attitude measures of students (n=28) and their parents were used to study the effects of a program. Results indicate significant positive impact on academic achievement and attitudes toward mathematics learning.

Assm, Ach, Att (MS)

Maldonado, Aldo Rene. (1998). *Conversations with hypatia: The use of computers and graphing calculators in the formulation of mathematical arguments in college calculus.*(The University of Texas at Austin). DAI-A 59(06), p. 1955, Dec 1998. [AAT 9838041]

Four aspects of a technological environment using Maple software and the TI-85 graphing calculator were investigated: protocols of interaction, procedures for the creation of mathematical knowledge, pencil and paper processes in technologically intensive calculus, and difficulties with technology.

Comp, GCal, Calc, Prf (PS)

Manheimer, Maris Spiessbach. (1998). *Journey into the NCTM Standards: A case study of six elementary school teachers and their classrooms.*(Columbia University Teachers College). DAI-A 59(06), p. 1956, Dec 1998. [AAT 9839094]

A multiple case study examined the professional development of teachers (n=6) as they made changes in their mathematics instruction in light of the 1989 standards for mathematics instruction promulgated by NCTM.

Curr, Tchg, TKnw (T, EL)

Manon, Jon Rahn. (1997). *Probability in context: Normative conceptions in commonly played games.*(University of Delaware). DAI-A 58(09), p. 3450, Mar 1998. [AAI9810866]

Structured interviews were conducted with 21 fifth graders about a set of everyday games in terms of their probabilistic content. The normative thinking elicited suggests that such games can be valuable instructional contexts for the middle grades.

Prob, Rep, Patt, Mscn (MS)

March, Cathleen C. (1998). *The effect of age at entrance to school on academic success in reading and mathematics.*(State University of New York at Buffalo). DAI-A 59(01), p. 123, Jul 1998. [AAT 9822173]

[Achievement scores of students (n=352) were examined to determine the main effects of beginning school age on later school achievement. Some instances of significant differences were found in reading achievement. No significant differences were noted among the groups at any of the grade levels on the mathematics variable.

Ach, Lrnr, Gend (EC)

Maree, Jacobus Gideon. (1997). *The development and evaluation of a study orientation questionnaire in mathematics.*(University of Pretoria (South Africa)). DAI-A 58(11), p. 4186, May 1998.

An instrument to measure study habits and attitudes toward studying mathematics was developed and used with high school students. Differences in levels of math anxiety, study habits, and locus of control were found by gender, grade level, and language groups.

Att, Anx, Ethn, Aff, Gend (HS)

Mari Molla, Ricard. (1996). *Mathematics achievement evaluation: Differential metric work in the "Keymath-Revised" [KMR] scale.*(Universitat De Valencia (Spain)). DAI-C 59(03), p. 487, Fall 1998.

The study consists of a KM-R standardization. Contributions give the KM-R more diagnostic interpretation richness and they allow intervention plans to be designed based on curriculum and cognitive psychology conclusions.

Assm, D/R, Lrng (Not given)

Marolla, Dean. (1998). *Mathematical problem solving ability of 7th grade girls in an all-girl class versus 7th grade girls in a mixed-gender class.*(California State University, Dominguez Hills). MAI 36(05), p. 1227, Oct 1998. [AAT 1389205]

An open-ended problem solving mathematics test was used to compare girls in two classes. Pretests and posttests after seven months of instruction revealed no significant difference between the means of the two groups.

Gend, Ach, PS (MS)

Martelly, Diana I. (1998). *Effects of using manipulative materials to teach remedial algebra to community college students on achievement and attitudes towards mathematics.*(Florida International University). DAI-A 59(03), p. 706, Sep 1998. [AAT 9826062]

Pre- and post-test versions of an achievement measure and of Aiken's Mathematics Attitude Inventory, and the Group Assessment of Logical Thinking were administered to students (n=253) to measure the effects of using Algebra Tiles and other manipulatives. Significant differences in favor of the manipulatives group were detected for achievement and attitude.

Manp, D/R, Alg, Ach, Att, Lrng (PS)

Martin, Danny Bernard. (1997). *Mathematics socialization and identity among African Americans: Community forces, school forces, and individual agency.*(University of California, Berkeley). DAI-A 58(07), p. 2575, Jan 1998. [AAT 9803289]

The culturally constructed meanings for mathematics knowledge of African-Americans (n=15) were explored, revealing the way their own perceptions of their status helped or hindered participation in mathematics. Theory and methods from cultural and cognitive perspectives are brought together.

Ethn, Eqty, Soc, Blf (ALL)

Martin, Martha Virginia Woolf. (1997). *Using video-based cases to situate pedagogical problems: Influences on preservice teachers' learning and implementation of instruction.*(Peabody College For Teachers of Vanderbilt University). DAI-A 58(12), p. 4624, Jun 1998. [AAT 9817285]

Work with six preservice teachers showed that video-based cases facilitate preservice teachers' understanding and implementation of a reform-based approach to instruction. Further, it is important to use well-posed problems to sharpen focus on video-based cases as sources of learning about the role of the teacher.

Prsv, Tchg, TKnw, TBlf, MMed (TE)

Mason, Ralph T. (1997). *Learning algebra personally.*(University of Alberta (Canada)). DAI-A 58(09), p. 3450, Mar 1998. [AAT NQ21596]

Grade nine students (n=22) learned algebra through a series of interactive small-group inquiry activities, reflecting a constructivist orientation to learning and teaching . Small-group inquiry proved to be a means for students to learn mathematics well, demonstrating epistemological and ontological reorientation.

Grpg, Lrng, Alg (HS)

Matsushita, Marimi. (1998). *A woman mathematician and her contributions: Mina Spiegel Rees.*(Columbia University Teachers College). DAI-A 59(01), p. 115, Jul 1998. [AAT 9822228]

Dr. Mina Rees' published papers, manuscripts, correspondence, books, and interviews with her co-workers were examined. The life and educational work and contributions of this mathematician are documented.

Gend, Phil (ALL)

Maxey, Dennis Craig. (1997). *Elaboration of explanation in collaborative intelligent tutoring systems.*(The University of Texas at Austin). DAI-A 59(02), p. 408, Aug 1998. [AAT 9825017]

High school Algebra I students (n=80) completed a study review session with a collaborative intelligent tutoring system (CITS) in which students explained to a computer how best to solve a mathematics problem. Students developing higher levels of elaboration (regardless of the quality of explanation) with the CITS also demonstrated higher academic achievement.

Ach, CAI, Comm, Alg, Lang (HS)

McDougall, Douglas Emerson. (1997). *Mathematics teachers' needs in dynamic geometric computer environments: In search of control.*(University of Toronto (Canada)). DAI-A 59(06), p. 1956, Dec 1998. [AAT NQ28123]

The study sought to understand the needs of experienced teachers (n=4) who, for the first time, are teaching geometry in a computer-based exploratory environment rather than in the traditional environment. Analysis of the data showed an initial loss of: (1) management control, (2) personal control, and (3) professional control.

CAI, TAtt, Geom, Tchg, TKnw (SE)

Mcfadden, Emily Dale Freund. (1997). *Effects of algebra instruction on the recognition of the mathematical structures of word problems.*(Boston University). DAI-A 58(07), p. 2575, Jan 1998. [AAT 9802249]

Comparison of pre-algebra and algebra students showed that formal study of algebra did not facilitate subjects' recognition of the structures of word problems. Pre-algebra students recognized structures of problems significantly more often than did algebra students. Two stages of structure recognition (procedural and structural) were identified.

Alg, PS, Patt (HS)

McGraw, Robert Luther, Jr. (1997). *Multiple intelligences theory and seventh-grade mathematics learning: A comparison of reinforcing strategies.*(Georgia State University). DAI-A 58(08), p. 3054, Feb 1998. [AAT 9804390]

Six seventh grade mathematics classes were randomly assigned to treatments to determine the effectiveness of reinforcing strategies based on Gardner's multiple intelligence theory. There was no significant difference in learning of mathematical concepts when reinforced using multiple intelligences in a non-aligned manner.

Lrng, Styl, Impl, Tchg (MS)

McIntyre, Laura Colleen. (1997). *The relationship of eighth-grade students' self-efficacy to their perceived preparedness for the Ohio Ninth Grade Proficiency Test and students' actual test results.*(The University of Akron). DAI-A 58(10), p. 3900, Apr 1998. [AAT 9813626]

This study explores the perceptions of eighth grade students (n=520) about themselves and their preparedness for the Ohio Ninth Grade Proficiency Test. Some factors analyzed were students' perceptions of self-efficacy, importance of the test to self and family, plans for further education beyond high school, and expectations for future success.

Att, Anx, Assm, Soc (SE)

McNeill, Patricia Ann. (1998). *Teacher training in a contextual mathematics intervention and teachers' stages of concern.*(Wilmington College (Delaware)). DAI-A 59(01), p. 87, Jul 1998. [AAT 9821004]

To examine the relationship between teacher's stages of concern regarding implementation of new mathematics teaching strategies and staff development, teachers (n=50) were divided into two groups. One group received training in Professor Barrett's Contextual Mathematics Teaching Methodology. Both groups were administered the Stages of Concern Questionnaire pre and post treatment.

Insv, Tatt, TAnx, TBlf (T)

Mehana, Majida Abdel-Amir. (1998). *A meta-analysis of school mobility effects on reading and math achievement in the elementary grades.*(The Pennsylvania State University). DAI-A 58(07), p. 2539, Jan 1998. [AAT 9802707]

Twenty-six studies conducted between 1975 and 1994 were analyzed to determine the effects of school mobility on reading and mathematics achievement in grades K-6. Mobility was negatively associated with reading and math achievement.

Ach, Soc, Revw, Impl (EL)

Melczarek, Robert Jan. (1996). *The effects of problem-solving activities using dynamic geometry computer software on readiness for self-directed learning.*(University of Florida). DAI-A 58(07), p. 2611, Jan 1998. [AAT 9800159]

This study examined the effectiveness of problem-solving activies using the Geometer's

Sketchpad on the readiness for self-directed learning, as well as, attitude towards mathematics, the use of computers and their mediating effects.
PS, CAI, Geom, Att, Lrnr (HS)

Merriweather, Michelle. (1998). *A study of high school mathematics teachers on their attitude towards and use of calculators.*(The American University). DAI-A 59(03), p. 762, Sep 1998. [AAT 9826678]

This study investigates the effects of the Virginia Network for Technology inservice program on teaching attitudes toward the use and integration of calculators during instruction. In addition, secondary teachers (n=6) were observed to determine use of graphics calculators.
Cltr, GCal, TAtt, Insv (HS)

Meza Hidalgo, Miriam Claret. (1997). *L'activation des connaissances a propos du monde reel dans la resolution de problemes verbaux en arithmetique.* [Title in English: The activation of real-world knowledge in solving arithmetic word problems]. (Universite Laval (Canada)). MAI 36(04), p. 890, Aug 1998. [AAT MQ26245]

A strong tendency to focus on the abstract rather than real-world knowledge was found among fifth-year Venezuelan students (n=119). Five hypotheses are offered as explanation.
PS, Mtcg, Ethn (EL)

Millette-Mcguire, Beverly. (1997). *The role of applied mathematics and algebra in postsecondary educational and occupational choices by rural students.*(University of Florida). DAI-A 58(07), p. 2493, Jan 1998. [AAT 9802344]

Rural high school graduates (n=304) indicated that mathematics content had little to do with the decision to continue in postsecondary education or enter the work force, and that their choices were influenced by teacher/parental input, previously set goals, or availability of programs of study.
Soc, Ethn, Plan (HS, PS)

Milou, Eric. (1998). *Attitudes toward and use of the graphing calculator in the teaching of algebra.*(Temple University). DAI-A 59(06), p. 1956, Dec 1998. [AAT 9838516]

The study examined current use of this technology in algebra classrooms, teachers' perceptions towards the technology, and any changes in the curriculum or instructional practices due to the technology. Teachers (n=146) completed a survey designed to indicate use and attitude towards graphing calculators and factors affecting teachers decisions about use.
GCal, Tatt, Alg, Curr (T, SE)

Mitchell, Monica Boswell. (1998). *Prospective and novice secondary mathematics teachers' conceptions and classroom pedagogy.*(Columbia University Teachers College). DAI-A 59(02), p. 439, Aug 1998. [AAT 9824387]

The purpose of the study was to identify the beliefs of beginning teachers, to describe how beliefs translate into pedagogy, and to determine how teacher conceptions evolve over the first year. Surveys, interviews, and classroom observation were used to study first year teachers from both four-year preparation programs and non-traditional, state-sponsored programs.
Tchr, Tatt, Prsv, TKnw, Tchg (T, SE)

Mitchell, Rebecca Hayward. (1997). *The perceptions and practices of selected high school teachers in special admission schools regarding writing across the curriculum.*(Temple University). DAI-A 58(10), p. 3881, Apr 1998. [AAT 9813529]

Social studies teachers were found to use writing across the curriculum strategies more than mathematics or science teachers.
Writ, Tchg, Tchr, IC (HS)

Molepo, Jacob Maisha. (1997). *The role of mathematics in developing rural and tribal communities in South Africa.*(University of Pretoria (South Africa)). DAI-A 58(11), p. 4215, May 1998.

The importance of, awareness of, positive attitude towards, and parental involvement with mathematics were highlighted as key to socioeconomic development of rural and tribal communities.
Ethn, Soc, Att (ALL)

Morris, Benay S. (1997). *Accelerated block scheduling in six high schools.*(University of Houston). DAI-A 58(11), p. 4226, May 1998. [AAT 9816226]

The problem addressed in this study is the effect of block scheduling on high school students' reading and mathematics achievement. The study examined six high school programs by comparing students in similar classes before and after block scheduling was implemented.

Curr, Ach, Impl, Ethn (HS)

Moskal, Barbara Marie. (1997). *Written open-ended decimal tasks: What information do teachers acquire and use through the examination of the modes, referents and relationships that students employ?*(University of Pittsburgh). DAI-A 59(01), p. 115, Jul 1998. [AAT 9821270]

Sixth-grade teachers (n=7) demonstrated through interviews that they do attend to the communication methods utilized, mathematics systems employed, and connections displayed by students in written tasks on decimals. Degree of elaboration and teacher factors, such as experience, impacted the type of information acquired by the teachers.

Comm, Rep, Patt, Writ, Decm, Tchr (T, MS)

Mosley-Jenkins, Shirlan Patricia. (1995). *A comparative study of Applied Math II and Algebra I on mathematical achievement of high school students in South Carolina.*(South Carolina State University). DAI-A 58(08), p. 3054, Feb 1998. [AAT 9806682]

The purpose of this study was to determine if there was a difference between mathematics achievement of Applied Mathematics II students in tech prep mathematics courses and those of Algebra I students in college prep courses. Total scores on Stanford Achievement Test-Series 8 as well as computation and mathematical applications were compared.

Curr, Ach, Alg, Gend, Ethn (HS)

Moyana, Hlengani Jackson. (1997). *Factors related to mathematics achievement of secondary school pupils.*(University of South Africa (South Africa)). MAI 36(03), p. 665, Jun 1998.

This study examined the interaction of student (n=163) gender and home background and teacher experience, gender, education, in-service education, homework, and testing frequency with mathematics achievement.

Soc, Tchr, Ach, Insv, TKnw, Att (SE)

Mukulalwendo, Lucas Nsama. (1997). *The relationship between developmental education program organizational structure and student achievement and retention in public community colleges.*(Grambling State University). DAI-A 59(02), p. 387, Aug 1998. [AAT 9824467]

The study compared students (n=1,745) in comprehensive and centralized developmental education programs with students in less comprehensive, less centralized programs. Pre-entry attributes of age, gender, ethnicity, English and mathematics ACT scores, and high school GPA were examined for their influence on collegiate achievement and retention.

D/R, Gend, Ach, Aff, Curr (PS)

Mwangi, Mary Wangari. (1997). *The effect of example format and self-explanations on children's word problem solving.*(University of New South Wales (Australia)). DAI-A 58(10), p. 3867, Apr 1998.

A series of five experiments conducted with third graders revealed that example-based instruction is a viable option in teaching elementary school children to solve word problems, but that students' attention must be appropriately directed during example studying.

Tchg, PS, Patt (EC)

Myers, Kimberly Ann. (1998). *The use of graphing/symbolic calculators in high school mathematics: A study of teacher knowledge, beliefs, and practices.*(University of Cincinnati). DAI-A 59(05), p. 1500, Nov 1998. [AAT 9833735]

Participating teachers (n=21) attended a daylong workshop on the TI-92 calculator. They completed a preliminary survey and open-ended questionnaire aimed at identifying knowledge, beliefs, and practices. Follow-up interviews were conducted to address teachers' reactions to the power and potential of the calculators.

GCal, TBlf, TKnw, Curr, TAtt, Tchg (HS)

Nelson, Theardis. (1997). *A case study analysis of Bob Moses's algebra project: A mathematics program for African-American middle school boys.*(University of San Francisco). DAI-A 58(11), p. 4175, May 1998. [AAT 9816265]

Several research strategies were used to develop a critical analysis of the curriculum project. The findings resulted in motivational strategies for student empowerment: ownership of learning, learning through the environment, the inclusionary aspects of all students being able to learn algebra, literacy of mathematics through real-world examples, self-esteem, and a social message.

Curr, Ethn, Tchg, Alg, Gend, Soc (MS)

Ng, Geok Lian. (1998). *Exploring children's geometric thinking.*(The University of Oklahoma). DAI-A 59(04), p. 1102, Oct 1998. [AAT 9828779]

This study examined 4th and 5th graders' (n=7) geometric thinking, specifically their understanding of area and volume. Tasks involved the use of base ten blocks and tangrams and questions concerning 2-D and 3-D understanding. Data were gathered over fifteen weeks through video-taped one-on-one interview sessions and frequent classroom observations.

Geom, Vis, Lrng, Manp (EL)

Nimmons, Lee Ann. (1997). *Spatial ability and dispositions toward mathematics in college algebra: Gender-related differences.*(Georgia State University). DAI-A 58(08), p. 3054, Feb 1998. [AAT 9804393]

Female students showed more gains in understanding and spatial visualization than did males when using a graphing calculator. Retention was higher among those using the graphing calculator. Lasting positive changes in disposition toward mathematics in females were brought about through the graphing calculator and encouraging activities.

Vis, Att, Gend, GCal, Tech, Alg (PS)

Noel, Lise-Marie. (1998). *Perceptions des mathematiques chez de futurs enseignants et enseignantes du primaire et du secondaire.* [Title in English: Perceptions of mathematics among future elementary and secondary teachers]. (Universite Laval (Canada)). MAI 36(04), p. 897, Aug 1998. [AAT MQ26253]

A questionnaire was administered to 96 future teachers. All defined mathematics as a science based on logic. Future secondary teachers described mathematics as a "whole," while future elementary teachers described mathematics as a set of facts and procedures.

TBlf, TAtt, TKnw, Tchr (TE)

Nolly, Glenn L. (1997). *Effective instructional strategies for teaching mathematics to African American children.*(The University of Texas at Austin). DAI-A 59(02), p. 388, Aug 1998. [AAT 9825038]

This single case study of a low SES, predominately African-American high school identifies successful instructional and curricular strategies for improving student achievement. Six themes were revealed: planning, professional development, high expectation, curriculum reform, pedagogy reform, instructional leadership, and knowledge construction.

Ethn, Soc, Tchg, Eqty, Curr, Lrng (HS)

Norko, Denise E. (1998). *Make room for fractals.*(Southern Connecticut State University). MAI 36(02), p. 325, Apr 1998. [AAT 1387539]

This thesis addresses the lack of fractal coverage in high school texts by presenting (1) an introductory chapter defining and describing fractals and (2) a series of ready-to-use lesson plans designed to introduce fractals into existing curricula in grades 7-12.

Matl, Patt, Curr, Rep (HS)

Norman, Elizabeth Ann Stell. (1997). *Career women's mathematics world: Anxiety or not?*(The University of New Mexico). DAI-A 58(10), p. 3867, Apr 1998. [AAT 9813155]

Twenty-five career women (ages 33 to 57), selected on whether or not they had calculus or beyond and whether or not they were anxious, were interviewed. Findings indicate that females should develop an ability to ask questions and an optimistic explanatory style in order to persist in mathematics.

Gend, Anx, Lrnr, Calc (ALL)

Nowosad, Susan Lynn. (1997). *Children's perceptions of mathematics.*(Wayne State University). DAI-A 58(11), p. 4215, May 1998. [AAT 9815353]

First and second graders indicated via journals and interviews that in spite of limited experiences, they have constructed rich understandings of their mathematical experiences.

Blf, Lrng, Writ (EC)

Nute, Nancy Earnheart. (1997). *The impact of engagement activity and manipulatives presentation on intermediate mathematics achievement, time-on-task, learning efficiency, and attitude.*(The University of Memphis). DAI-A 58(08), p. 2988, Feb 1998. [AAT 9807175]

Intermediate students (grades 4, 5, and 6, n=241) were assigned to six groups receiving various combinations of manipulatives activity/ presentation instructional strategies and a control group. The type of presentation correlated with time-on-task and grade level. There was no effect for mathematics achievement. Neutral to slightly positive attitudes were demonstrated.

Tchg, Manp, Ach, Att (EL)

O'Connor, Wanda Louise Flippin. (1998). *Effects of a differentiated scope and sequence in a physics-based precalculus course.*(The University of Texas at Austin). DAI-A 59(06), p. 1956, Dec 1998. [AAT 9838068]

This experimental study emphasized connections between precalculus and physics. The treatment involved changing the scope and sequence so that the mathematical concepts connected with the physical concepts for the experimental group, while using the traditional scope and sequence for the control group. No significant difference was detected.

Calc, IC, Curr, Patt (HS)

Odett, David Charles. (1997). *An evaluation of item response theory for detecting differential item functioning of examinees' responses to the seventh grade mathematics MEAP test investigating learner characteristics.*(Wayne State University). DAI-A 58(11), p. 4246, May 1998. [AAT 9815355]

Differential item functioning (DIF) on the Michigan Educational Assessment Program (MEAP) was measured between gender and race using the Mantel-Haenszel test statistic and the three parameters logistical model. Both techniques detected DIF but not for the same test items. Both techniques tended to support the literature on gender and race differences.

Assm, Gend, Ethn (HS)

Orton-Flynn, Susan Jane. (1997). *The design of a multimedia calculator and its use in teaching numeracy to those with learning difficulties.*(Coventry University (United Kingdom)). DAI-C 59(03), p. 486, Fall 1998.

The aim of this study was to investigate the potential of multimedia systems for the teaching of numeracy to a range of learners. The Multimedia Interactive Calculator mediates between the concrete concepts of learning number and the abstract sense of mathematics, a transition which is difficult for many pupils, particularly dyslexics.

LD, NSns, Tech, Calc, Curr (K-12)

Osborne, Jason W. (1998). *Measuring metacognition: Validation of the assessment of cognition monitoring effectiveness.*(State University of New York at Buffalo). DAI-A 59(05), p. 1459, Nov 1998. [AAT 9833630]

The goal was to develop and validate a measure of metacognition that would be sufficiently versatile and simple for classroom teachers, special education teachers, and other educators to utilize in a variety of contexts. Students' indication of which responses they believe are incorrect on a test are compared to actual performance.

Mtcg, Ach, Impl (MS)

Otomo, Yuko. (1998). *The relationship of computer anxiety, mathematics anxiety, trait anxiety, test anxiety, gender, and demographic characteristics among community college students.*(Columbia University Teachers College). DAI-A 59(06), p. 1957, Dec 1998. [AAT 9839107]

Examples of findings are, the correlation between computer anxiety and mathematics anxiety was significant and positive. Mathematics anxiety was strongly and positively related to test anxiety. Females had higher mathematics anxiety than males. There were no significant gender differences concerning computer anxiety, test anxiety, or trait anxiety (n=153).

Tech, Anx, Gend, Comp, Soc (PS)

Pape, Stephen Joseph. (1998). *Components of a reading comprehension model of mathematical problem solving and their relation to problem solving success.*(City University of New York). DAI-A 59(04), p. 1069, Oct 1998. [AAT 9830750]

The study examined the role of mathematical conceptual and procedural knowledge and reading processes in the representation and solution phases of problem solving. Data were collected through videotapes as students (n=80) were asked to think aloud as they solved word problems that contained both consistent and inconsistent language.

PS, Lang, NSns, Mtcg (MS)

Parker, Sheila Latralle Blackston. (1997). *Overcoming math anxiety: Formerly math-anxious adults share their solutions.*(University of Georgia). DAI-A 58(08), p. 2960, Feb 1998. [AAT 9807079]

Overcoming math anxiety during adulthood involves making a transition of major magnitude. Adults (n=12) overcame math anxiety through a transition involving six identified stages. The adults then became part of a support network to help others.

Anx, Soc (PS)

Paul, Reginald. (1997). *Passage d'une preuve basee sur les mesures a la preuve basee sur le raisonnement deductif en geometrie.* [Title in English: Transition from geometric proof based on measurement to geometric proof based on deductive reasoning].(Universite Laval (Canada)). MAI 36(04), p. 894, Aug 1998. [AAT MQ25699]

A case study teaching experiment of four secondary students employed a Piagetian constructivist perspective to take them through the transition from proof by measurement or visualization to proof by deductive reasoning.

Prf, Geom, Lrng, PS (SE)

Penalva Martinez, Maria Del Carman. (1996). *Investigation about the understanding of the concept of cardinal number of an infinite set.*(Universitat De Valencia (Spain)). DAI-C 59(01), p. 7, Spr 1998.

The objectives of this exploratory study in mathematics education and cognitive development were (1) to study the conceptions and difficulties that students with various mathematical training (n=14) have with respect to the concept of cardinal number of an infinite set, and (2) to analyze the evolution of that conception in a few students (n=6) and describe the personal concept they construct.

NSns, AdvM, Mscn, Phil (PS)

Pettitt, Lisa Marie. (1998). *Gender intensification, mathematics task value, relationship task value, and intentions to pursue mathematics during adolescence.*(University of Denver). DAI-B 59(04), p. 1887, Oct 1998. [AAT 9830248]

To examine the impact of the social world of adolescents on attitudes toward mathematics, a survey was administered to elementary, middle, and high school students (n=374). Results indicated that boys perceive messages from peers and parents to be equally encouraging of mathematics and relationships, whereas girls perceive the messages to be more encouraging of relationships.

Gend, Soc, Aff, Curr (K-12)

Picard, Carol A. (1998). *Second graders' resistance to a constructivist approach to mathematics.*(Colorado State University). DAI-A 59(05), p. 1500, Nov 1998. [AAT 9835025]

The purpose of this single class case study was to explore how children come to understand mathematics in a constructivist classroom. Children's attitudes, motivation, beliefs, prior experiences, and unwillingness to risk being wrong seemed more important than teachers' materials or methods.

Aff, Lrng, Att, Blf, PS (EC)

Pirie, Deborah Kearns. (1997). *Two construct validation studies using scores from a state-mandated, criterion-referenced test.*(Texas A&M University). DAI-A 58(11), p. 4247, May 1998. [AAT 9815825]

The scoring scheme, proposed by test publishers for the 1995-96 Algebra I Test administered in Texas, implied that objective scores were accurate indicators of students' skills in specific content areas. Research results oppose this idea. On the other hand, state administrators' assertion that students' performance on the test was related to math readiness is supported.

Assm, Ach, Alg (HS)

Poehl, Terrie T. (1997). *Using the van Hiele model of thinking: Assessing geometry knowledge of high ability and gifted high school students in Algebra II, Trigonometry, and AP Calculus.*(University of New Orleans). DAI-A 58(08), p. 3054, Feb 1998. [AAT 9807503]

Results suggest that the study of Trigonometry or AP Calculus over a nine-week period increases geometry understanding, but the study of Algebra II does not (n=336). A factor analysis indicated Usiskin's van Hiele Geometry Test had no construct validity for determining van Hiele levels, and previous research using it should be reevaluated.

Geom, Assm, Alg, Calc (HS)

Portela, Jose Henrique Da Costa. (1997). *Communicating mathematics through the internet: A qualitative case study.*(Texas A&M University). DAI-A 58(11), p. 4176, May 1998. [AAT 9815826]

Reactions and perceptions of mathematics graduate students regarding the instruction delivered through the Internet were analyzed. Face-to-face class meetings in a close physical proximity were considered necessary for success by the students. Students outlined major advantages of being connected to the Internet.

Comm, Tech, Comp (PS)

Porter, Mary Kathleen. (1996). *The effects of writing to learn mathematics on conceptual understanding and procedural ability in introductory college calculus.*(Syracuse University). DAI-A 58(07), p. 2576, Jan 1998. [AAT 9738758]

The study compared two sections taught by the same instructor, one that engaged in writing activities and one that did not. A classification system for errors in calculus was developed. Using this system, the errors of the students were categorized. No significant differences were found between the two groups in terms of their conceptual errors, nor their procedural errors.

Calc, Writ, Mscn (PS)

Powell, Charles Addison. (1997). *The nature of effective responses to state Algebra I policy at high-poverty Texas high schools.*(The University of Texas at Austin). DAI-A 58(07), p. 2576, Jan 1998. [AAT 9802995]

Teachers' experiences and actions upon Texas mandates and policies affecting Algebra I were examined. A multiple-case situational analysis was conducted at ten high-poverty high schools with the highest passing rate on state mathematics examinations. Among the major findings, two variables with particular explanatory power are school size and educator's role.

Assm, Curr, Soc, Tblf (HS)

Preast, Katie Louise. (1998). *Placement of students in mathematics courses according to TASP test scores and course reading levels.*(Texas A&M University - Commerce). DAI-A 59(04), p. 1103, Oct 1998. [AAT 9829507]

The purposes of this study were to examine factors affecting appropriate placement of students (n=830) in developmental-mathematics and college-algebra courses, to examine the readability of textbooks and the Texas Academic Skills Program (TASP) test reading and mathematics scores for student placement in mathematics classes at a community college.

Assm, D/R, Matl, Alg (PS)

Preston, Ronald V. (1997). *Mathematical modeling in the secondary school: Possibilities and constraints.*(Indiana University). DAI-A 58(09), p. 3450, Mar 1998. [AAT 9810753]

Mathematics teachers (n=21) participated in an institute to prepare them to use modeling projects in their classrooms. Assertations included modeling as a good fit with mathematics education reform, that the institute served as a catalyst for teacher change, and that there are real and persistent constraints to teacher change and mathematics education reform.

Rep, Curr, Insv, Tchg (T, SE)

Prichard, Gerald Ray. (1997). *The use of abstract knowledge and subgoal structures in procedural transfer tasks for a community college elementary algebra course.*(The University of Texas at Austin). DAI-A 58(07), p. 2565, Jan 1998. [AAT 9802999]

Instructional treatments were provided in two courses to study the matching of abstract forms to their conditions of applicability and the use of subgoal structures in procedural transfer tasks (n=37). More errors were related to the actions associated with the abstract principles than the conditions of applicability or subgoals for transfer items.

Lrng, D/R, Mscn, Alg (PS)

Priebe, Roger Louis. (1997). *The effects of cooperative learning on content comprehension and logical reasoning in a second-semester university computer science course.*(The University af Texas at Austin). DAI-A 59(01), p. 105, Jul 1998. [AAT 9822687 DELETE-COMPUTER SCIENCE]

A comparison of a traditional lecture/discussion environment (n=25) and cooperative learning (n=24) revealed no difference between the two groups in content comprehension or logical reasoning ability, measured by pretests and posttests. The cooperative learning group had significantly better attendance.

Grpg, Tchg, Comp, Lrnr (PS)

Pruet, Susan Atkins. (1997). *The identification of CORD's "Applied Mathematics".*(Auburn University). DAI-A 58(07), p. 2518, Jan 1998. [AAT 9802470]

The algebra content of the Center of Research and Occupational Development's (CORD) two-year applied mathematics curriculum overlapped with topics recommended by NCTM, although there were significant omissions. There was less agreement on the teaching /learning strategies promoted and implemented by CORD and those recommended by NCTM.

Curr, Alg (SE)

Pyke, Curtis Lee. (1998). *Information processing variables and dual coding theory: Effects on algebra and task performance.*(State University of New York at Albany). DAI-A 59(05), p. 1501, Nov 1998. [AAT 9832268]

The study was designed to collect data that would test the tenability of a theoretical model, implying that students' representations and transformations of tasks, tasks which entail application of geometric knowledge and algebraic skills, explain the effects of reading ability and spatial orientation.

Lrng, Alg, Geom, Vis (HS, PS)

Pysher, Ernest Raymond. (1998). *The effect of self-monitoring homework processes and teacher assessments on academic achievement among beginning algebra students.*(City University of New York). DAI-A 59(04), p. 1070, Oct 1998. [AAT 9830756]

Minority high school students (n=118) in beginning algebra courses in a large, urban, inner city school participated in a study examining the effects of self-monitoring homework processes and homework outcomes on academic achievement.

Alg, Mtcg, Ach, Soc, Assm (HS)

Quinlan, Elizabeth. (1997). *Women's participation in Canadian university mathematics programs.*(University Of Toronto (Canada)). MAI 36(06), p. 1447, Dec 1998. [AAT MQ29170]

This study examines women's presence in mathematics programs in Canadian universities by analyzing enrolment and degree attainment statistics. The study also explores some of the economic considerations affecting women's pursuit of graduate studies in mathematics in order to shed light on their continuing under-representation.

Gend, Aff, Soc (PS)

Quinn, Anne Katherine Larson. (1997). *Justifications, argumentations, and sense-making of preservice elementary teachers in a constructivist mathematics classroom.*(Kent State University). DAI-A 58(07), p. 2576, Jan 1998. [AAT 9802513]

The study investigated students' (n=13) mathematical behaviors before, during, and after a semester-long, inquiry-based constructivist course. Practices were analyzed to see how they changed throughout the semester, to see what the group of students agreed on as a basis of their arguments, and to see how students' sense making improved.

PS, Lrng, Prsv (TE, EL)

Rabb-Liu, Amy Felice. (1997). *Teaching methods and student understanding in calculus.*(The University of Arizona). DAI-A 58(08), p. 3055, Feb 1998. [AAT 9806818]

Effective teaching practices were uncovered through commonalities found in a comparative case study of college instructors' (n=3) methods. Student errors and difficulties revealed differences between what instructors think they have taught and actual student understanding.

Tchg, Lrng, Calc (PS)

Rafael, Jill Sarah. (1997). *Calculus reform from a constructivist perspective.*(University of Calgary (Canada)). MAI 36(04), p. 890, Aug 1998. [AAT MQ24694]

This thesis presents a history of calculus reform; a philosophy of mathematics leading to a constructivist framework for mathematics education; a definition of what reform is and how it fits the constructivist perspective; a summary of current efforts and research; and some ideas for the future based on constructivist ideas.

Calc, Revw, Lrng, Curr, Impl (PS)

Randolph, Tamela Dawn. (1997). *An assessment of mathematics anxiety in students from grades four through eight.*(Southern Illinois University at Carbondale). DAI-A 58(09), p. 3451, Mar 1998. [AAT 9808845]

The Mathematics Anxiety Scale for Children (MASC) was tested for validity and reliability, and then used as the assessment instrument. Although significant levels of anxiety were found at the 8th grade, an overall decrease in the levels of anxiety in students from grades 4 through 8 was found. Gender differences were found only at the 4th and 5th grade levels.

Anx, Gend (EL)

Rasmussen, Chris Larson. (1997). *Qualitative and numerical methods for analyzing differential equations: A case study of students' understandings and difficulties.*(University of Maryland College Park). DAI-A 58(11), p. 4215, May 1998. [AAT 9816518]

Data were collected on students (n=6) in one section of an introductory course in differential equations for scientists and engineers using Mathematica to introduce qualitative and numerical methods. Analysis of data from both an individual cognitive perspective and a sociocultural perspective revealed a gap between the intended and the achieved curriculum.

Curr, Lrng, AdvM (PS)

Reardon-Lazo, Liliana R. (1997). *Analysis of content specific pedagogy in programs that grant mathematics single subject credentials in California.*(University of San Francisco). DAI-A 59(05), p. 1501, Nov 1998. [AAT 9834287]

This study offers a new pedagogical model that extends Shulman's ideas on pedagogical content knowledge to include the structure of mathematics as proposed by Hierbert and Lefevre. The combination of theories provides a model for conceptually describing the pedagogical tools that mathematics teachers need.

Tchg, TKnw, Prsv (TE)

Rees-Krebs, Margaret Jane. (1998). *Elementary school teachers' conceptions of mathematics instruction.*(University of Maryland College Park). DAI-A 59(06), p. 1916, Dec 1998. [AAT 9836514]

This descriptive case study examined four areas of teachers' (n=5) conceptions of mathematics instruction: (a) the ways in which they conceptualize it; (b) a comparison of their conceptualizations to NCTM's constructivist based Standards; (c) influences on the development of participants' conceptions; and (d) contextual factors identified as contributing to or hindering instruction.

Tchg, TBlf, Lrng, Tchr (T, EL)

Retzer, Martin W. (1998). *The effects on attitude and achievement of a cognitive apprenticeship approach to college-level algebra.*(Northern Illinois University). DAI-A 59(05), p. 1501, Nov 1998. [AAT 9834188]

This dissertation examined the effects on learner attitude and achievement of using a cognitive apprenticeship approach to teach college algebra. The cognitive apprenticeship approach included emphasis on a language-intensive classroom in which learners were encouraged to think, talk, write, and reflect on their learning of mathematical concepts.

Mtcg, Oral, Writ, Ach, Aff, Alg (PS)

Richardson, Samuel. (1995). *A comparative study of mathematics attitudes before and after remediation.*(South Carolina State University). DAI-A 58(08), p. 3055, Feb 1998. [AAT 9806688]

The purpose of this study was to examine the effects of remedial mathematics on students' (n=100) attitudes toward mathematics and to determine the effects of gender, ethnicity, and age on their attitudes toward mathematics. There were significant differences in attitudes toward mathematics before and after remediation.

D/R, Att, Gend, Ethn (PS)

Roberts, David Lindsay. (1998). *Mathematics and pedagogy: Professional mathematicians and American educational reform, 1893-1923.*(The Johns Hopkins University). DAI-A 59(01), p. 297, Jul 1998. [AAT 9821188]

This dissertation examined the involvement of American college and university mathematicians in pedagogical questions and educational reform in the late nineteenth and early twentieth centuries. The study investigates how the mathematicians responded to the ongoing educational ferment.

Curr, Phil, Soc, Revw (ALL)

Robinson, Shawn Henri. (1998). *An analysis of placement systems for new and returning community college students, specifically in the college preparatory and entry-level college-level mathematics courses.*(University of Central Florida). DAI-A 59(03), p. 707, Sep 1998. [AAT 9827979]

The goal of this study was to increase the effectiveness of student placement systems and strategies used by community colleges. It provides an instrument and strategy for the optimum placement of students that integrates students experiences, student demographics, student aptitude, and placement scores on the college's primary placement exam.

Ach, Assm, D/R, Soc (PS)

Rock, David. (1998). *Mathematical problem-solving and communication using email and the internet.*(University of Central Florida). DAI-A 59(03), p. 763, Sep 1998. [AAT 9827989]

The purpose was to determine whether requiring an explanation of a problem deters a student from supplying an answer, and whether a supplied answer is less likely to be correct when an explanation is required. A setting is established for future investigation into the use of the Internet as a tool to teach problem solving and enhance communication in mathematics.

PS, Tech, Writ, Comp, Comm (K-12)

Rockenbach, Martie Gibson. (1997). *Perceptions of preservice and inservice elementary teachers toward the use of manipulatives in the classroom.*(Oklahoma State University). DAI-A 58(08), p. 2989, Feb 1998. [AAT 9806569]

Preservice (n=32) and inservice (n=20) elementary teachers vary widely in attitudes toward mathematics. Among conclusions are (1) a major objective in the preparation of preservice teachers should be the development of a philosophy that would incorporate favorable attitudes and (2) training in the use of manipulatives in preservice courses and continuing.

TAtt, TBlf, Manp, Prsv, Insv (TE, T, EL)

Roddick, Cheryl Diane. (1997). *A comparison study of students from two calculus sequences on their achievement in calculus-dependent courses.*(The Ohio State University). DAI-A 58(07), p. 2577, Jan 1998. [AAT 9801773]

Traditional calculus students and Calculus & Mathematica students were compared on achievement in courses that require calculus as a prerequisite. Significant differences in performance were found in differential equations, physics, and engineering mechanics courses. Qualitative analysis showed differences in how students approached problems and applied knowledge.

Lrng, Ach, Calc, PS, AdvM (PS)

Ross, Sylvia Shearin. (1998). *Organizational effectiveness as perceived by middle school mathematics and communication skills teachers in North Carolina's schools of excellence, schools of distinction, schools making exemplary growth, schools making expected growth and low-performing schools.*(North Carolina State University). DAI-A 59(03), p. 683, Sep 1998. [AAT 9826020]

Middle grade mathematics and communication skills teachers were surveyed. Survey results were compared to spring, 1997 student achievement scores on end-of-grade tests. Parsons' Theory of Social Systems provided the framework to demonstrate the role of perception in organizational effectiveness.

TBlf, Ach, Soc, TAtt (MS)

Roth McDuffie, Amy M. (1998). *Factors that influence college mathematics professors in the process of implementing reform-based instruction.*(University of Maryland College Park). DAI-A 59(06), p. 1957, Dec 1998. [AAT 9836472]

The current knowledge base about changing instructional practice at the college level is synthesized. A qualitative case study of (1) how two mathematics professors enact the goals for reform, and (2) what factors influence the mathematics professors as they attempt to implement changes in their instructional practice.

Curr, Insv, Tchg, TBlf (PS)

Round, Eugene Lester. (1998). *A study of the potential benefits of using interactive software in high school geometry solely for whole class demonstration and discussion.*(The Ohio State University). DAI-A 59(01), p. 115, Jul 1998. [AAT 9822360]

Individual student use (n=55) of the TI-92 calculator was followed by whole-class discussion using a single TI-92 for demonstration. At the end of the study, many students could apply theorems proved for a single diagram to similar diagrams and modify diagrams to develop conjectures or proof. Some outcomes differed for males and females.

GCal, Geom, Tchg, Prf, Att, Gend (HS)

Rucker, Sandra. (1997). *The use of cooperative learning in undergraduate discrete mathematics courses.*(Georgia State University). DAI-A 58(08), p. 3055, Feb 1998. [AAT 9804396]

Cooperative learning is deemed an effective teaching strategy that can promote active student learning and positively impact students' confidence in their ability to learn and perform well on mathematical tasks. Some topics are better introduced by lecture or discussion. Students' attitudes toward the discipline of mathematics and toward themselves as learners were not affected.

Grpg, Tchg, Blf, Att (PS)

Rusch, Tracy Linn. (1997). *Mathematics content coursework for prospective elementary teachers: Examining the influence of instructional strategy on the development of essential place value knowledge.*(The University of Texas at Austin). DAI-A 59(02), p. 439, Aug 1998. [AAT 9825072]

The majority of the student participants (n=206) had a shallow understanding of place value as they entered and little further understanding after the course. Participants in constructivist classes made greater gains in understanding than those in more traditional classes, but it could not be attributed to instructional strategy.

PlcV, Prsv, Lrng (TE, EL)

Russell, Ronald Alan. (1997). *The use of visual reasoning strategies in problem-solving activities by preservice secondary mathematics teachers.*(University of Georgia). DAI-A 58(08), p. 3055, Feb 1998. [AAT 9807128]

Three case studies revealed the use of objects and actions a common means of problem solving. Visual reasoning was found to be a metacognitive activity, involving four critical factors: mathematical knowledge, spatial ability, verification, and purpose of measurement.

PS, Rep, Vis, Mtcg (TE, SE)

Sachse-Lee, Carole Maureen. (1998). *The relationship between working memory and mathematical problem-solving in children with and without learning disabilities.*(University of California, Riverside). DAI-A 59(02), p. 419, Aug 1998. [AAT 9825690]

Significant ability group differences emerged between fifth- and sixth-grade students with (n=31) and students without (n=47) learning disabilities. Significant correlations were obtained between problem solution accuracy and working memory in children without disabilities, but not children with disabilities.

Lrng, LD, PS, Lang, Vis (MS)

Schaffner, Andrew Alan. (1997). *Tools for the advancement of undergraduate statistics education.*(University of Washington). DAI-A 58(08), p. 3056, Feb 1998. [AAT 9807023]

Tools and pedagogy were developed to assist statistics instructors build a more concept oriented undergraduate introductory course which emphasizes understanding over mechanical skills. Benchmark lessons of statistical facets use collaborative and activity based learning, and world wide web technology. Evidence of effectiveness is provided.

Tchg, Lrng, Stat, CAI (PS)

Schillinger, Jolene Urquhart. (1996). *The ethnomathematics of the Senoufo women of Mali, West Africa.*(The Union Institute). DAI-A 58(08), p. 3056, Feb 1998. [AAT 9805532]

Phenomenological interviews with fourteen Senoufo women demonstrate their mathematical knowledge within the context of their lives and their understanding of their world. Recommendations are outlined for augmenting that knowledge to meet the needs of their changing world.

Ethn, Gend, Soc (ALL)

Schroeder, Sandra Davey. (1997). *The identification and description of changes in mathematics anxiety when remedial mathematics courses are taught using conceptual teaching methods.*(The Ohio State University). DAI-A 59(05), p. 1501, Nov 1998. [AAT 9834062]

Conceptual understanding teaching methods were used with first-year college students. Results from the Mathematics Anxiety Ratings Scale (n=23) showed a decrease in mathematics anxiety. Interview results (n=9) suggest that students appreciated being able to think for themselves, and took with them principles of learning mathematics that were later useful.

D/R, Anx, Tchg, Comm (PS)

Seagraves, Margaret Carper. (1996). *The use of calculators in mathematics and mathematics achievement of adjudicated adolescents.*(The University of Alabama). DAI-A 58(09), p. 3419, Mar 1998. [AAT 9808233]

Evidence suggests that adolescents with court records and major school problems who are taught mathematical skills through programmed instruction raise their mathematical computation and their mathematical reasoning achievement gains whether they use multifunction calculators, four-function calculators, or no calculators.

Cltr, Ach, Soc, Lrnr, Curr (SE)

Searcy, Mary Elizabeth. (1997). *Mathematical thinking in an introductory applied college algebra course.*(University of Georgia). DAI-A 58(08), p. 3056, Feb 1998. [AAT 9807131]

Schoenfeld's (1992) "near decomposition" of mathematical thinking was used to look at the complexity of a student's thinking. A case study describes the knowledge base, problem-solving strategies, beliefs, approaches to monitoring and control, and practices of the student.

PS, Mtcg, Knw, Blf, Alg (PS)

Sedighian, Kamran. (1998). *Interface style, flow, and reflective cognition: Issues in designing interactive multimedia mathematics learning environments for children.*(The University of British Columbia (Canada)). DAI-A 59(05), p. 1538, Nov 1998. [AAT NQ27243]

Findings include: interface design in educational software is crucial; direct manipulation graphical interfaces should be used with care; software design can help children enjoy learning mathematics; and the inclusion of music and visual aesthetics can make an activity more enjoyable.

MMed, Comp, Curr, Aff, Ach (ALL)

Sefair Nader, Joseph. (1998). *Using multimedia for teaching probability and statistics.*(University of Puerto Rico, Mayaguez (Puerto Rico)). MAI 36(04), p. 1125, Aug 1998. [AAT 1388394]

A multimedia program was developed for use in probability and statistics courses in a college engineering department; it was analyzed for hardware and software development, text and graphics management, uses and quality of incorporated sound, and multimedia navigation systems. The importance of the interactive exercises is shown and explained.

MMed, Prob, Stat, Tchg, Comp (PS)

Sentif, Margaret Kragnes. (1997). *Implementation of staff development training funded by the D. D. Eisenhower mathematics and science education program in Mississippi school districts.*(The University of Southern Mississippi). DAI-A 58(09), p. 3478, Mar 1998. [AAT 9809159]

A significant relationship was found between training effectiveness and training structure, administrative factors, incentives, and training components among K-6 teachers (n=114). A significant relationship was found between training effectiveness and training components, especially the degree to which the training was of a hands-on nature.

Insv, Tblf (T, EL)

Shin, Min-Hee. (1997). *The effects of self-regulated learning environments on achievement and motivation in problem solving.*(The Florida State University). DAI-A 58(11), p. 4193, May 1998. [AAT 9816190]

Fifth-grade students with embedded training in self-regulatory skills not only performed better on a posttest, but also expressed more confidence and satisfaction than those with out training. Students with low perceptions of personal control on achievement benefited more from the training than high perceived control students (n=60).

PS, Mtcg, Blf (EL)

Shockey, Brenda Paulette. (1997). *The effects of varying retention intervals within a block schedule on knowledge retention in mathematics.*(University of Maryland College Park). DAI-A 58(11), p. 4215, May 1998. [AAT 9816553]

The mean scores of students having a retention interval (RI) of zero, eight, and twelve months on a pre-review, post-review, and end-of-course test in precalculus were constrasted. Assessments were multiple-choice tests and performance-based. Significant differences appeared only in scores on pre-review and post-review multiple-choice tests.

Curr, Tchg, Calc, Soc (HS)

Silver, Jennifer Williams. (1997). *Writing-to-learn in mathematics classes: A survey of mathematics educators.*(New York University). DAI-A 58(09), p. 3451, Mar 1998. [AAT 9810500]

New York State mathematics educators (n=117) hold various levels of familiarity and attitudes toward the use of writing-to-learn (WTL). Results of using WTL in their classrooms are given, and perceived problems and uncertainties, as well as the enthusiasms, which motivate teachers to use or reject WTL as a primary mode of mathematics instruction are presented.

Writ, TAtt, Tchg (T)

Simon, Aaron Neal. (1997). *Students' understanding of the comparison of linear, quadratic and exponential functions.*(The University of Wisconsin - Madison). DAI-A 58(10), p. 3867, Apr 1998. [AAT 9734388]

A description of the types of strategies seventh-grade students used to solve problems, the development of these strategies, and students' success in reaching higher levels of reasoning is given. Findings demonstrate student growth from concrete strategies relying on empirical reasoning to more conceptual strategies and a stage-like development.

PS, Patt, Alg (MS)

Singletary, Stephanie Lynn. (1997). *Mathematics achievement of female middle school students in single-sex versus mixed-sex cooperative learning groups.*(Christopher Newport University). MAI 36(01), p. 28, Feb 1998. [AAT 1386965]

No significant difference was found between mathematics achievement of females in single-sex cooperative learning groups and females in mixed (male and female) groups. However, lower achieving females had a slight advantage working in mixed-sex groups and higher achieving females showed meaningful increase when tested after working in single-sex groups.

Ach, Gend, Grpg, Alg (MS)

Sloan, David Lane. (1997). *The effects of a non-tracked mathematics curriculum on the standardized achievement test scores of high school students.*(University of Southern California). DAI-A 58(11), p. 4247, May 1998. [AAT 9816071]

Standardized test scores for students at two similar high schools were analyzed. Statistically significant results were not found for the Mathematics Concepts and Applications test. Mathematics Computations scores indicated that a heterogeneously grouped integrated curriculum may increase student achievement.

Curr, Ach, Grpg (PS)

Smith, James Paul. (1998). *A quantitative analysis of the effects of chess instruction on the mathematics achievement of southern, rural, black secondary students.*(Louisiana Tech University). DAI-A 59(04), p. 1103, Oct 1998. [AAT 9829096]

Nineteen students were instructed in chess for 18 weeks. Achievement levels in a post-test were higher for these students than for the control group. Specifically, only female members of the treatment group scored significantly higher.

Curr, Rep, Gend, Ach (HS)

Smith, Joanne T. (1997). *Academic effects of developmental kindergarten.*(Temple University). DAI-A 58(10), p. 3828, Apr 1998. [AAT 9813547]

Analysis of fifth-grade test scores of 939 students did not reveal positive effects of either an extra year of developmental kindergarten or an extra "repeat" year of programming later in elementary school. Neither effort was supported as a means to increase long-term achievement in reading and mathematics.

Ach, Plan, Curr, Soc, Assm (EC)

Smith, Nancy J. (1997). *Evaluation of the TASP remediation program.*(The University of Texas at Austin). DAI-A 58(07), p. 2535, Jan 1998. [AAT 9803030]

A model for evaluating remedial instruction (in one or more of reading, writing, or mathematics based on results of the Texas Academic Skills Program Test) was developed and applied to two different institutions. This application provides examples to others of how to ask evaluation questions, identify applicable variables and subjects, and apply appropriate statistical methodology.

D/R, Rsch, Tchg, Assm, Lrnr (PS)

Smith-Jones, Yvonne Darcel. (1997). *A comparative analysis of school-based performance of mobile and nonmobile students.*(The College of William and Mary). DAI-A 58(11), p. 4193, May 1998. [AAT 9815247]

The reading achievement and the mathematics achievement of mobile students in fifth grade of an urban school were significantly less than that of nonmobile students. The number of absences, discipline referrals, and retentions for mobile students were significantly higher (n=244). Interventions are necessary to meet the needs of mobile students.

Curr, Soc (EL)

Snipes, Vincent Tate. (1997). *Examination of the mathematical education of African-Americans in North Carolina and Louisiana utilizing critical race theory of education: Four case studies.*(The Florida State University). DAI-A 58(07), p. 2577, Jan 1998. [AAT 9802216]

Four case studies present historical information about the mathematics education of African-American students. Critical race theory was used to look at factors that affected the underachievement and under representation of African-Americans in mathematics. Findings on mathematics curricula, expectations, and issues of equity are discussed.

Ethn, Curr, Lrng (T, HS)

Sobol, Anita Joyce. (1998). *A formative and summative evaluation study of classroom interactions and student/teacher effects when implementing algebra tile manipulatives with junior high school students.*(St. John's University (New York)). DAI-A 59(04), p. 1103, Oct 1998. [AAT 9830812]

The use of Algebra Tiles had a significant effect on the students' (n=780) learning of algebraic concept of zero and the four operations with integers and polynomials. No significant differences in attitude was demonstrated, and no change in student interactions was evident.

Manp, Clln, Alg, Rsch (SE)

Song, Susan Haesook. (1997). *Writing to understand in the math classroom.*(Pacific Lutheran University). MAI 36(03), p. 672, Jun 1998. [AAT 1388285]

Findings indicate that using writing activities in the math classroom may help transform the traditional classroom environment to a student-centered learning place. Also, it is suggested that there are difficulties in implementing a new curriculum as a student teacher.

Writ, Curr, Patt, PS, Prsv (SE)

Spies, Robert Allan. (1997). *An analysis of two self-instructional methods for increasing math accuracy, fluency, and retention with elementary students.*(The University of Nebraska - Lincoln). DAI-A 58(10), p. 3836, Apr 1998. [AAT 9812361]

Two self-instructional methods, Computer-Assisted Instruction and Cover, Copy, and Compare, were effective at increasing students' (n=6) accuracy, fluency, and retention of multiplication facts.

CAI, Tchg, M/D (EL)

Sproule, Stephen Llewellyn. (1998). *An investigation of students' metaphors, metonymies and prototypes in algebraic reasoning and symbol manipulation.*(The Florida State University). DAI-A 59(02), p. 440, Aug 1998. [AAT 9824707]

Eighth and ninth graders demonstrated the use of elaborate visual metaphors in interpreting algebraic symbols. Metaphors of arithmetic were applied to understanding of algebraic reasoning tasks.

Alg, PS, Patt, Vis (SE)

St Clair, Janet. (1997). *High school algebra teachers' beliefs and practices toward using reading, writing, and dialogue as instructional strategies.*(Vanderbilt University). DAI-A 58(11), p. 4216, May 1998. [AAT 9815623]

Most teachers (n=425) indicated traditional beliefs about both language areas and mathematics and mathematics teaching. It is suggested that any effort to integrate the language areas first consider transforming teachers' beliefs about mathematics and mathematics teaching.

Writ, Oral, Tblf, Alg, Lang (T, HS)

Stanton, Ray Joseph, III. (1997). *Relationship of cooperative grouping to student outcome variables in community college arithmetic courses.*(University of Southern California). DAI-A 59(05), p. 1502, Nov 1998. [AAT 9835062]

Students in a traditional lecture course (n=127) were compared to those in a similar course with a cooperative learning approach (n=127). Those in the cooperative learning course were more likely to complete the course credit but less likely to continue to higher level mathematics.

Grpg, Tchg, Ach, Att, Arth (PS)

Starnes, Harry Austin. (1997). *Achievement in reading comprehension and mathematics: An analysis of specific teacher-controlled and non-teacher controlled factors.*(East Carolina University). DAI-A 58(09), p. 3408, Mar 1998. [AAT 9810950]

Teacher (n=16) planning and use of classroom time in alignment with the tested curriculum were significant predictors of student achievement (n=400). Achievement was directly associated with prior achievement, gender, level of parent education, and ethnicity.

Ach, Lrnr, Tchg, Plan, Ethn, Gend, Soc (EL, T)

Swanger, Wayne H. (1997). *Effects of a homework assignment routine on the homework performance of elementary students with disabilities and non-identified peers on mathematics assignments.*(The Pennsylvania State University). DAI-A 58(07), p. 2520, Jan 1998. [AAT 9802758]

Two processes in the Homework Assignment Routine assessed student (n=68) performance and provided reteaching of target problems. Reported findings support the contention that the intervention was effective in improving homework performance of students with disabilities and non-disabled peers.

Mscn, Tchg, LD (EL)

Swenson, Karen Astrid. (1998). *Middle school mathematics teachers' subject matter knowledge and* *pedagogical content knowledge of probability: Its relationship to probability instruction.*(Oregon State University). DAI-A 59(02), p. 440, Aug 1998. [AAT 9824767]

Cases studies of four middle school teachers indicated that the teachers generally lacked knowledge of probability content, held traditional views about mathematics and the learning and teaching of mathematics, and lacked an integrated understanding of the nature of the reform.
TKnw, Prob, Tchr (T, MS)

Swor, Gail Michelle. (1998). *Selected demographic and affective variables influencing female enrollment in advanced high school mathematics.*(University of Minnesota). DAI-A 59(04), p. 1104, Oct 1998. [AAT 9830259]

Enrollment was found to be related to student perceptions of ability, parent expectations, teacher/student interactions and expectations, math as a male domain, and the usefulness of mathematics.
Gend, Aff, Soc, Styl (HS)

Sydney, Dawn Lewis. (1997). *Mathematics journal writing in entry level college algebra.*(California State University, Long Beach). MAI 36(04), p. 904, Aug 1998. [AAT 1388729]

Twenty-one students wrote weekly journal assignments. Results indicate that while writing did not significantly affect participant attitude, performance was improved by the addition of the writing assignment. No differences were found for gender, first language, or classroom format.
Writ, Alg, Lang, Gend, Tchg (PS)

Szanto, Gabriella. (1997). *Arithmetic disability of adults.*(University of Toronto (Canada)). DAI-A 59(06), p. 1911, Dec 1998. [AAT NQ27773]

Adults with arithmetic disability were found to be similar in computational skills and arithmetic related reasoning to younger counterparts of the same arithmetic level. Although error patterns among the two groups were different, a weak developmental lag model in which arithmetic disabilities represent an incomplete maturation was supported.
Arth, LD, Mscn, Anx (ALL)

Tai, Robert H. (1998). *Experience, gender, and performance: Connecting high school physics experience and gender differences to introductory college physics performance.*(Harvard University). DAI-A 59(04), p. 1114, Oct 1998. [AAT 9830074]

Surveys were analyzed from 1500 students at 14 different universities. Teaching fewer topics in greater depth in high school physics appeared to be helpful to college physics students. Females appeared to do better than did males in non-calculus physics, but the opposite was true for calculus-based physics.
Calc, Gend, Curr, Tchg, IC (HS, PS)

Tamassia, Claudia Vendramel. (1997). *Traditional and alternative methods of identifying differential item functioning in a Brazilian achievement test administered using the BIB spiraling design.*(University of Illinois at Urbana - Champaign). DAI-A 58(10), p. 3836, Apr 1998. [AAT 9812788]

To help test practitioners understand differential item functioning (DIF) on a fourth grade mathematics test, traditional DIF procedures and alternative techniques were explained and illustrated. Balanced incomplete block (BIB) spiraling design was used to select items falling into different clusters and to compare gender and race grouping.
Assm, Gend, Ethn (EL)

Tarr, James E. (1997). *Using middle school students' thinking in conditional probability and independence to inform instruction.*(Illinois State University). DAI-A 58(07), p. 2577, Jan 1998. [AAT 9803741]

An instructional program was developed, implemented, and evaluated (n=39). Knowledge of student cognition is enhanced and insights on how such knowledge can be used to inform instruction are provided.
Curr, Lrng, Prob, Patt (MS)

Tauzer, Leslie Jayne. (1997). *Development of number sense in an individualized, special needs learning environment: The struggle between theory and practice.*(Pacific Lutheran University). MAI 36(01), p. 28, Feb 1998. [AAT 1386418]

Through observations, one-on-one interaction, and surveys of special needs students, the development of number sense and student attitudes about achievement were examined. Findings suggest that student development of number sense varies with students' abilities and attitudes toward the classroom curriculum.
NSns, LD, Lrnr, Att, Tchg, Lrng (SE)

Teague, Daniel Jones. (1997). *The teaching of high school calculus in the United States and Japan.*(North Carolina State University). DAI-A 58(12), p. 4592, Jun 1998. [AAT 9819356]

Comparisons between textbook presentation (content, problems, pedagogical flow, challenge, use of technology), classroom activity, adolescents in society, and questions on entrance examinations for national universities were made between U.S. and Japanese practices in response to three major research questions.

CC, Calc, Matl, Tchg, Soc (HS)

Thomas, Edward Franklin. (1998). *The mathematical roots of technological society.*(Emory University). DAI-A 59(04), p. 1203, Oct 1998. [AAT 9830187]

This inquiry is a reflection on the philological origins of the term mathematics, and a philosophical exploration of the role of mathematics in the development of the modern technological world.

Phil, Tech, Knw (ALL)

Thomas, John Phillip. (1997). *Productivity and mathematics achievement and attitudes among African-Americans: Testing Walberg's model.*(University of Illinois at Chicago). DAI-A 58(07), p. 2535, Jan 1998. [AAT 9801575]

Walberg's Educational Productivity Factors were used to study differences between African-American students and students of other ethnic backgrounds (n=10001). Findings show that productivity factors were related to mathematics achievement and attitude, the influence on outcomes was the same for all ethnic groups, and multiple factors have an impact on achievement.

Ethn, Ach, Att, Soc (SE)

Thomas, Laurie Jeanne. (1997). *Image of self as teacher mediated by computer technologies in learning to teach.*(University of Illinois at Urbana - Champaign). DAI-A 58(10), p. 3826, Apr 1998. [AAT 9812789]

Four cases studies of preservice teachers portray the perceptions and experiences in growth as teacher in the context of computer mediated technologies in learning to teach. Implications for teacher education, including issues of equity and the changing role of the classroom teacher, are presented.

TBlf, Comp, Prsv, Tchr, Tech (TE)

Thornton, Candra Dianne. (1998). *Manipulative objects and their influence on kindergarteners' performance of mathematic tasks.*(University Of Houston-Clear Lake). MAI 36(05), p. 1223, Oct 1998. [AAT 1389379]

The use of formal teaching manipulatives was compared to the use of informal life manipulatives in mathematics activities with 53 kindergarten children. The null hypothesis failed to be rejected.

Manp, Tchg (EC)

Thorpe, Pamela Kay. (1998). *A hierarchical linear modeling approach towards the dynamic assessment of mathematical conceptual learning.*(University of Notre Dame). DAI-B 59(06), p. 3101, Dec 1998. [AAT 9835543]

This study shows the benefits of changing from an incremental view to a process view of change that models different growth parameters, and provides an instructional example of how to promote conceptual development. It also supports the contention that eighth-grade students who did not take first year algebra can learn algebraic concepts.

Lrng, Tchg, Alg, Knw, Lrnr (MS)

Tinklepaugh Biegler, Julia Ann. (1996). *The effect of presenting a common error with an explanation.*(Syracuse University). DAI-A 58(07), p. 2521, Jan 1998. [AAT 9738739]

The presentation of a common error with an associated explanation was examined using 215 eighth graders. Of four treatment combinations, only the presentation of an explanation without a common error proved statistically significant.

Alg, Tchg, Mscn, Rsch (SE)

Tolley, Karen Beth Dekle. (1998). *The mathematical success of poor African American first graders: An examination of the developmental niche.*(University of Georgia). DAI-A 59(06), p. 1899, Dec 1998. [AAT 9836349]

The environments of mathematically successful poor African American first graders (n=6) were examined. Similarities of context for the six children included: variety of social interactions daily, emphasis on the same three mathematical event categories, direct instruction, variety of mathematical materials available, and time spent working alone.

Ethn, Soc, Tchg (EC)

Trimboli, John Michael. (1996). *A journey through numeracy: Correlates of success in initial college mathematics.*(Syracuse University). DAI-A 58(07), p. 2577, Jan 1998. [AAT 9738763]

The correlates of mathematical success at the college level were identified and analyzed to create multiple regression prediction equations for five initial mathematics sequences (n=213). All correlates were derived from high school transcript information, SAT scores, and gender.

Ach, Assm, Lrnr (HS, PS)

Troy, Jill Du Breuil. (1998). *Using children's writing as a window into their mathematical thinking.*(San Jose State University). MAI 36(05), p. 1224, Oct 1998. [AAT 1389689]

The mathematical thinking of fifth graders was examined using their pen-pal correspondence with preservice elementary teachers. Factors encouraging and discouraging dialogue were identified, and the letters revealed a strong reflection of the topics and problem formats used in class.

Writ, Prsv, Tchg, Lrnr (EC, TE)

Van Gorp, Mark Jay. (1997). *Classnet: A potential computer-mediated communications learning tool in preservice teacher education?*(Iowa State University). DAI-A 58(11), p. 4245, May 1998. [AAT 9814702]

Current computer-mediated communications (CMC) uses and outcomes were examined, a new CMC tool called ClassNet was described, and an evaluation of ClassNet with preservice teachers was presented. Participants valued the experience, constructed knowledge of student thinking, and experienced instruction central to mathematics reform.

CAI, Prsv (TE)

Vanhorn, Celeste Alexander. (1997). *How organizational structure and grouping in elementary school contributes to formal tracking of students in mathematics at the onset of middle school.*(The University of Texas at Austin). DAI-A 59(02), p. 440, Aug 1998. [AAT 9825117]

Data from various sources were used to investigate how the process of structured differential learning opportunities significantly affect achievement outputs. Organizational structure of grouping can produce inconsistent and unfair access to knowledge, especially in relation to ethnic and socio-economic status and the use of test scores.

Grpg, Ach, Assm, Ethn, Soc (EL)

Vasquez, Selina. (1[illegible]). *Effective instructional techniques for at-r[illegible] mathematics students.*(The University of Texas at Austin). DAI-A 59(06), p. 1957, Dec 1998. [AAT 9838149]

The use of an algorithmic instructional technique (model, guided practice, transition, and independence) was examined for effects on at-risk students. No statistically significant results for the technique were obtained.

Tchg, Lrnr, Assm, Soc (HS)

Vick, Beverly Johns. (1996). *Elementary students' oral and written discourse within an integrated language arts and mathematics block that has a focus on literature.*(University of Missouri - Columbia). DAI-A 59(02), p. 437, Aug 1998. [AAT 9823329]

The extent to which students in a multiage classroom used oral and written language in response to literature with mathematical themes was examined. The use of literature to promote interest in mathematics was explored.

Lang, IC, Comm, Tchg, Writ (EL)

Waker, Robert Lee. (1997). *Scientific notation.*(California State University, Dominguez Hills). MAI 36(02), p. 325, Apr 1998. [AAT 1387247]

The use of a computer program to teach scientific notation resulted in improvements from pretest to post-test with 24 of 27 students.

CAI, Tchg, Tech (SE, PS)

Wang, Li-Ching. (1997). *Taiwanese elementary teachers' mathematics beliefs and the relationship to instructional practices in the context of constructivist curriculum change.*(University of Maryland College Park). DAI-A 58(11), p. 4179, May 1998. [AAT 9816538]

Teachers' (n=334) beliefs about teaching mathematics, about children's learning, and about the relationship between beliefs and instructional practices were investigated. Findings include beliefs on performance, relational, and informal knowledge; girls in constructivist classes; effort and learning; and difficulties teachers face.

TBlf, Tchg, Curr, Lrng (T, EL)

Wardlaw, Roosevelt. (1997). *Effect of computer assisted instruction on achievement outcomes of adults in developmental education programs: A comparative study.*(State University of New York at Buffalo). DAI-A 58(10), p. 3804, Apr 1998. [AAT 9811694]

Grade gains in reading and mathematics were used to compare results of CAI to traditional methods of teaching. Attitudes toward computers of students (n=120) taught by CAI were assessed. No difference in mathematics results between groups, and no difference in attitude were found. A difference was found in reading results.

Tchg, CAI, Ach, Att (PS)

Warner, Sally Marlene. (1997). *Students' perceptions of learning experience and learning environment in a computer-managed self-paced mathematics curriculum.*(Simon Fraser University (Canada)). MAI 36(03), p. 672, Jun 1998. [AAT MQ24265]

This study reports how (largely at-risk, poor, ethnic minority and ESL) students perceived their mathematics learning in both traditional classroom environments and a computer-managed learning environment in which the students were self-paced.

Comp, Ethn, Soc, Lrnr, Tchg, Att (SE)

Watkins, Kelly D. (1998). *Differential characteristics of memory aptitude as a function of cognitive ability and mathematics achievement in children diagnosed with learning disabilities.*(University of Arkansas). DAI-B 59(06), p. 3086, Dec 1998. [AAT 9838300]

Short-term memory tests were found to be a significant predictor of mathematics achievement in children with a specific learning disability in mathematics (n=29) and for those with a specific learning disability who exhibited normal achievement in mathematics (n=39).

LD, Lrng, Lrnr, D/R (K-12)

Wayand, Lee Scott. (1998). *Identifying communication obstacles that arise when translating the modern mathematics classroom to distance.*(The Ohio State University). DAI-A 59(05), p. 1502, Nov 1998. [AAT 9834095]

This study of a distance calculus course taught to 75 high school students from a central state university campus revealed that an active instructor can engage distance students in Socratic dialogues through various distance communicative tools. Thus, distance courses can support pedagogy as well as new and active materials.

Tech, Comm, Tchg, Curr, ClIn (HS, PS)

Wear, Stella Brown. (1997). *The effect of single-sex mathematics classes on achievement and attitude for eighth-grade students.*(The University of Alabama). DAI-A 59(01), p. 116, Jul 1998. [AAT 9821569]

Students in single-sex classes were compared to students in mixed classes. Mathematics achievement and student attitudes did not differ statistically. All participants were positive about their experiences with the single-sex classes, but only 50% would choose that arrangement again.

Gend, Ach, Att (SE)

Wheatley, Karl Frederick. (1997). *The relationships between teachers' efficacy beliefs and reform-oriented mathematics teaching: Three case studies.*(Michigan State University). DAI-A 58(09), p. 3451, Mar 1998. [AAT 9808174]

Themes emerging from three case studies revealed successful ways for teachers to feel efficacious when teaching mathematics in reform-oriented methods. Intrinsic motivation, self-regulation, active teaching and learning, an interweaving of new and traditional methods, and an interdependent sense of efficacy are components of these themes.

TBlf, Curr (T, EL)

White, Dorothy Yazidah. (1997). *The mathematics classroom question and response patterns of third-grade teachers in high-minority population schools.*(University of Maryland College Park). DAI-A 58(09), p. 3451, Mar 1998. [AAT 9808679]

This examination of teacher change as exhibited by four third-grade teachers in an inservice program revealed that all four teachers changed their questioning patterns to include more higher level questions, and increase distribution of questions to students by race and gender. The degree of change varied by teacher. Student assessment showed significant gains in content knowledge.

Tchr, Insv, Tchg, TKnw, Ethn, Knw (T, EC)

White, Michael Robert. (1997). *The effects of cognitive learning strategies interventions with learning disabled students, in the topical areas of reading and mathematics.*(The University of Iowa).

DAI-A 58(08), p. 3091, Feb 1998. [AAT 9805734]

Interventions were evaluated for effectiveness through a meta analysis. Concerns about existing studies are listed. Among the most salient findings for LD students in mathematics are: (a) three types of treatment interventions were deemed as statistically effective, and (b) interventions were most successful at the junior and senior high levels.

D/R, LD, Revw, Lrng (ALL)

Wick, Catherine Anne Modjeska. (1998). *How secondary mathematics teachers understand the concept of function.*(University of Minnesota). DAI-A 59(02), p. 441, Aug 1998. [AAT 9823846]

Sixty-four secondary teachers were surveyed and 16 were interviewed. Teachers were successful in translating between various representations of functions (as formula, ordered pairs, graph, etc.). The misconceptions identified included: functions as one-to-one correspondences and the perception that all functions are linear relationships.

TKnw, Rep, Mscn, Insv (T, HS)

Wilcox, Diane Marie. (1997). *The use of animation with instruction and feedback in fractions software for children.*(The University of North Carolina at Chapel Hill). DAI-A 58(08), p. 3099, Feb 1998. [AAT 9803666]

Animated graphics and static graphics were compared in terms of effectiveness in instruction and feedback, students' (n=128) retention of fraction concepts, and gender differences in test performance. No differences were found on retention test performance or gender. Significant differences were found among treatment variations.

Tech, CAI, Frac, Gend (EC)

Wilkerson, Sheila Miller. (1997). *A model for evaluating the effectiveness of instruction in content-based teacher inservice workshops.*(The University of North Carolina at Chapel Hill). DAI-A 58(08), p. 2992, Feb 1998. [AAT 9803667]

A model for evaluating inservice workshops in mathematics and science was developed and implemented. The effectiveness of presenting content-based courses to teachers was demonstrated.

Insv, TKnw, Assm, Rsch (T)

Williams, Kenneth Michael. (1997). *Writing about the mathematical problem-solving process to help nontraditional college students solve mathematics problems in a beginning algebra course.*(The University of Michigan). DAI-A 58(10), p. 3867, Apr 1998. [AAT 9811219]

Two treatment groups (n=85, returning-adult, mostly African-American) learned to use executive processes and heuristic strategies in problem solving. One group also wrote about the process. The executive processes and heuristic strategies did not significantly improve performance, but when combined with writing activities effectively did so.

Writ, PS, Alg, Ethn (PS)

Wilson-Relyea, Barbara Jane. (1997). *Influences on the level of mathematics achieved by female adolescents: A test of a model of academic choice.*(The University of Memphis). DAI-A 58(08), p. 3005, Feb 1998. [AAT 9807186]

Jacquelynne Eccles' expectancy-value model of academic choice was used to investigate the influence of developmental and psychological constructs on the achievement of increasing levels of mathematics for females. Findings supported the influence of the value the student places on mathematics on her subsequent level achieved.

Gend, Blf, Att (SE)

Windsor, Annette Mary. (1997). *A descriptive study of level three advanced mathematics students' conceptual understanding of the roots of polynomial functions.*(Memorial University of Newfoundland (Canada)). MAI 36(02), p. 325, Apr 1998. [AAT MQ23187]

An integrated approach with the graphing calculator was used to develop understanding of roots of polynomial functions. Students were able to explain the root, and could provide details about the aspects of a root and were proficient with the symbolic, graphic, and tabular forms of polynomial functions.

GCal, Calc, Tchg, Lrng (HS)

Woods, Joan Marie. (1997). *Cooperative learning in mathematical writing: Problem-solving, self-perceptions, and attitudes of fifth-grade female, minority students.*(Fordham University). DAI-A 58(09), p. 3409, Mar 1998. [AAT 9809026]

Answers to four questions uncovered a successful method in which to understand the processes reflective of female student achievements, attitudes, and behavior; the effectiveness of combining cooperative learning and the Writing in Math Program; and the presence of characteristics of female learning.

Gend, Grpg, Writ, PS, Att, Blf (EL)

Yaw, Marai Theresa. (1998). *The referent: A neglected factor in building mathematical concepts at the elementary level.*(University of Central Florida). DAI-A 59(03), p. 763, Sep 1998. [AAT 9827994]

Three textbook series for first and fourth grade levels were examined for their approach to referents in terms of developing children's sense of numbers. The matrix used to analyze the texts proved valuable for such objective analysis and can be used as a tool in future curricula development.

NSns, Curr, Plan, Rep (EL)

Ysasi, Raul Simon. (1997). *The relationship between cognitive strategy usage and reading and mathematics achievement of fifth and sixth grade English language learners in an urban school district.*(Wayne State University). DAI-A 58(11), p. 4190, May 1998. [AAT 9815401]

The CALLA Learning Strategies Questionnaire in Reading and Mathematics and the Metropolitan Achievement Test results of students (n=51) were analyzed. Data suggested that reading comprehension and mathematical understanding of procedures is likely to differ remarkably as a function of cognitive style and strategy use.

Lrng, Styl (MS)

Yum, Sichang. (1998). *How coherent texts with varied examples help students learn about statistics: A test of text processing models.*(The University of Texas at Austin). DAI-A 59(06), p. 1912, Dec 1998. [AAT 9838171]

An experiment with 208 Korean undergraduates showed that providing readers with more coherent and explicit texts overall led to better text comprehension. The cognitive representation of the procedural text was evidently different from that of the descriptive text.

Lang, Stat, Ethn, Styl (PS)

Zandieh, Michelle J. (1997). *The evolution of student understanding of the concept of derivative.*(Oregon State University). DAI-A 58(08), p. 3056, Feb 1998. [AAT 9805485]

A structured way to describe an individual student's understanding of derivative was developed and applied to analyzing the evolution of that understanding for students (n=9) during a calculus course. Students' learning demonstrated that layers and representations of concepts are not hierarchical.

Calc, Lrng (HS)

Zeek, Catherine Kell. (1997). *A study of the relationships between teachers' beliefs and classroom practices in mathematical problem solving.*(Texas A&M University - Commerce). DAI-A 58(12), p. 4562, Jun 1998. [AAT 9817896]

Teachers' (n=5) beliefs were compared to their practices. Areas of congruence and dissonance are described. For example, teachers' practice in teaching problem solving was more teacher-directed and skill-based than conversations indicated. Reasons for areas of dissonance and suggestions for teachers and researchers are included.

TBlf, Tchg, PS (EL)

Zuiker, Mark Arthur. (1997). *Four structural models of the effects of selected teacher background variables on mathematics attitude and achievement.*(The Ohio State University). DAI-A 58(10), p. 3868, Apr 1998. [AAT 9813379]

Direct and indirect effects of eight teacher background variables on changes in student learning were examined. None of the variables exhibited a statistically significant direct effect on the change in mathematics attitude or achievement. Other variables were found to have significant effects.

Ach, Att, Tchr (HS)

Dissertations and Theses by Institution

Australia

University of New South Wales
Mwangi

Canada

Carleton University
Lei

Simon Fraser University
Atkinson; Warner

Memorial University of Newfoundland
Windsor

The University of British Columbia
Crespo; Sedighian

The University of Western Ontario
Bateman

Universite Du Quebec A Chicoutimi
Bond

Universite Laval
Danine, Meza, Noel, Paul

University of Alberta
Dawkins; Joshi; Mason

University of Calgary
Rafael

University of Ottawa
Kelly-Begin

University of Toronto
Bellamy; Hall; Kalchman; McDougall; Quinlan; Szanto

Northern Ireland

Queen's University of Belfast
Cowan

Puerto Rico

University of Puerto Rico--Mayaguez
Sefair Nader

South Africa

University of Pretoria
Dube; Gray; Maree; Molepo

University of South Africa
Moyana

Spain

Universitat de Valencia
Mari Molla; Penalva Martinez

United Kingdom

Coventry University
Orton-Flynn

Open University
Crowe

University of Bath
Chronaki

United States

Arizona State University
Johari; Koellner

Auburn University
Dilullo; Elder; Hauge; Lawrence, Frank Robert; Pruet

Boston University
Johnson; Mcfadden

California State University, Dominguez Hills
Bragg; Harris; Hollaway; Maine; Marolla; Waker

California State University, Fresno
Calhoun

California State University, Long Beach
Kanemoto; Sydney

Christopher Newport University
Singletary

City University of New York
Pape; Pysher

Colorado State University
Picard

Columbia University Teachers College
Hylton-Lindsay; Lindboe; Manheimer; Matsushita; Mitchell; Otomo

Cornell University
Gaddis

Drake University
Chadwick

East Carolina University
Starnes

Emory University
Thomas

Fairleigh Dickinson University
Heavey

Florida Atlantic University
Colarulli; Cook

Florida International University
Burton; Martelly

Fordham University
Gradone; Woods

Georgia State University
Bell; Bosche; Ferguson, Golley, McGraw, Nimmons, Rucker

Grambling State University
Mukulalwendo

Harvard University
Clarke; Tai

Illinois State University
Bishop; Britton; Fox; Hassani; Kersaint; Tarr

Indiana University
Dias; Egger Moellwald; Keiser; Khalid; Preston

Iowa State University
Van Gorp

Kansas State University
Hughes

Kent State University
Graham; Jones; Quinn

Louisiana Tech University
Ellerman; Smith

Loyola University of Chicago
Coates

Miami University
Brown, Melva L.

Michigan State University
Cheong; Wheatley

Mississippi State University
Devaney; Johns

Montana State University
Luebeck

National-Louis University
Draznin

New York University
Liou-Mark; Silver

North Carolina State University
Blanton; Gregorio; Ross; Teague

Northern Arizona University
Friel

Northern Illinois University
Jensen; Retzer

Northwestern University
Drueck

Ohio University
Coates

Oklahoma State University
Bowenj; Lightner; Rockenbach

Old Dominion University
Fischer

Oregon State University
Swenson; Zandieh

Pacific Lutheran University
Song; Tauzer

Peabody College For Teachers of Vanderbilt University
Martin

Purdue University
Hall

Saint Louis University
Brown; Cheng; Everage

San Jose State University
Ehlers; Troy

South Carolina State University
Brown; Buck; Carroll; Hunter; Mosley-Jenkins; Richardson

Southern Connecticut State University
Norko

Southern Illinois University at Carbondale
Randolph

St. John's University (New York)
Callan; Sobol

Stanford University
Fuller

State University of New York at Albany
Harrington, Pyke

State University of New York at Buffalo
Barrett; Basta; Grant McLoughlin; March; Osborne; Wardlaw

Syracuse University
Hardin; Porter; Tinklepaugh Biegler; Trimboli

Temple University
Milou; Mitchell; Smith

Tennessee State University
Hardaway; Jackson

Texas A&M University
Brown; Jasper; Lowery; Pirie; Portela

Texas A&M University--Commerce
Early; Preast; Zeek

Texas A&M University--Kingsville
Belmarez; Garcia

Texas Southern University
Garza-Perez

Texas Woman's University
Blaine

The American University
Abu Diab; Hackett; Jones; Merriweather

The Claremont Graduate University
Arvidson; Blaszczynski; Lang

The College of William and Mary
Smith-Jones

The Florida State University
Figgers; Franquiz; Hecht; Shin; Snipes; Sproule

The George Washington University
Haver

The Johns Hopkins University
Roberts

The Louisiana State University and Agricultural and Mechanical College
Alexander; Autrey; Jones

The Ohio State University
Contreras Francia; Dlamini; Roddick; Round; Schroeder; Wayand; Zuiker

The Pennsylvania State University
Edwards; Maccini; Mehana; Swanger

The Union Institute
Fong; Hazelbaker; Schillinger

The University of Texas at Austin
Priebe

The University of Akron
McIntyre

The University of Alabama
Brewer; Godfrey; Seagraves; Wear

The University of Arizona
Alexander; Rabb-Liu

The University of Chicago
Fernandez

The University of Connecticut
Duarte; Gavin; Hernandez Garduno

The University of Iowa
Anderson; Graham; Hartl; Howald; White

The University of Memphis
Nute; Wilson-Relyea

The University of Michigan
Williams

The University of Mississippi
ClarK

The University of Nebraska--Lincoln
Spies

The University of New Mexico
Diel; Norman

The University of North Carolina at Chapel Hill
Wilcox; Wilkerson

The University of North Carolina at Greensboro
Atkins

The University of Oklahoma
Ng

The University of Southern Mississippi
Daves; Sentif

The University of Tennessee
King

The University of Texas at Austin
Bryan; Castillo; Eyles; Fan; Kamalvand; Leggett; Maldonado; Maxey; Nolly; O'Connor; Powell; Prichard; Rusch; Smith; Vanhorn; Vasquez; Yum

The University of Utah
Doyle; Hyde

The University of Wisconsin--Madison
Ambrose; Cole; Fischer; Simon

Tufts University
Goodrow

University of Arkansas
Cleaveland; Dickinson; Watkins

University of Bridgeport
Agoora

University of California--Berkeley
Martin

University of California--Los Angeles
Leonard

University of California--Riverside
Carson; Sachse-Lee

University of California--Santa Barbara
Chen

University of Central Florida
Robinson; Rock; Yaw

University of Cincinnati
Myers

University of Colorado at Boulder
Burton

University of Delaware
Manon

University of Denver
Pettitt

University of Florida
Melczarek; Millette-Mcguire

University of Georgia
Arvold; Brill; Brombacher; Gober; Leslie; Parker; Russell; Searcy; Tolley

University of Houston
Johnson; King; Morris

University of Houston--Clear Lake
Langston; Thornton

University of Illinois at Chicago
Thomas

University of Illinois at Urbana--Champaign
Tamassia; Thomas

University of Lowell
Allen

University of Maryland College Park
Bryant; Campbell; Garner; Huntley; King; Leonard; Rasmussen; Rees-Krebs; Roth McDuffie; Shockey; Wang; White

University of Massachusetts
Itterly,

University of Minnesota
Baker; Desmond; Haller; Swor; Wick

University of Missouri--Columbia
Vick

University of Missouri--Saint Louis
Bremer

University of New Orleans
Bonnette; Poehl

University of North Texas
Burns

University of Notre Dame
Thorpe

University of Pennsylvania
Ebby; Ginsburg-Block

University of Pittsburgh
Bunt; George; Harijati; Moskal

University of San Francisco
Baab; Nelson; Reardon-Lazo

University of Sarasota
Fine; Gilreath

University of South Carolina
Langston

University of South Florida
Fox; Hall

University of Southern California
Sloan; Stanton

University of Virginia
Durant

University of Washington
Lim; Schaffner

University of Wyoming
Cassity

Vanderbilt University
St Clair

Walden University
Finch; Houghton

Washington State University
Facemyer

Wayne State University
Nowosad; Odett; Ysasi

Western Michigan University
Batzer; Crawford; Kett

Widener University
Gentile

Wilmington College (Delaware)
Brown; Fritz; Hollstein; McNeill

Research Articles in Mathematics Education Published in 1998

Beth D. Greene & S. Asli Özgün-Koca
The Ohio State University

This section lists 224 articles in mathematics education research that were published in 1998. Each entry is coded (see *Key to Codes*) with one to three major topic codes (in bold type) and any number of minor topic codes, as well as the grade level code (in parentheses). Studies related to preservice or inservice teacher education are indicated by the appropriate codes (Prsv, Insv). The level designated for teacher education or teacher studies indicates the grade level(s) at which the intern or teacher participants teaches, followed by the level code, "T" for teacher or "TE" for teacher education. All entries are indexed by major codes at the end of the volume (see page 105). A list of the journals searched and the number of articles included from each is provided at the end of this section.

Abramovich, Sergei. (1998). Manipulative and numerical spreadsheet templates for the study of discrete structures. *International Journal of Mathematical Education in Science and Technology*, 29(2), 233-252.

This paper suggests that the study of homogeneous and heterogeneous patterns of manipulative spreadsheet templates allows for appreciation of the development of knowledge about discrete structures and offers a vision of mathematics as a human activity.
CAI, NSns, Patt, Comp (K-12)

Abramovich, Sergei; Nabors, Wanda. (1998). Inactive approach to word problems in a computer environment enhances mathematical learning for teachers. *Journal of Computers in Mathematics and Science Teaching*, 17(2-3), 161-180.

This report suggests that using the iconic and computing features of a spreadsheet enhances the transition from natural language sentences to pictorial and numerical representations of algebraic word problems. The research was performed in a lab setting with preservice and inservice teachers enrolled in contemporary general mathematics and problem-solving courses.
PS, Comp, Rep, Insv, Psrv (PS)

Adams, Claire. (1998). Children's perceptions of calculators. *Equals Mathematics and Special Educational Needs*, 4(3), 16-18.

This study examines what students think about calculators and their use in school. The research indicates that children had mainly positive views about the calculator, although none of them appeared particularly confident in using it.
Calc, Att, Tchg (EL)

Allen, Thomas E. (1998). Mathematics: Successful transition requires curriculum reform. *Perspectives in Education and Deafness*, 16(5), 12-13.

A survey of the mathematics teachers of (n=1,484) students with deafness assessed the degree to which the National Council for Teachers of Mathematics (NCTM) standards were being implemented through deaf education programs. Results indicate that mathematics curricula in classrooms for students with deafness are not fully meeting the NCTM standards.
Curr, LD, D/R (K-12)

Anderman, Eric M. (1998). The middle school experience: Effects on the math and science achievement of adolescents with LD. *Journal of Learning Disabilities*, 31(2), 128-138.

This study examines data from the National Education Longitudinal Study. The research indicated a strong gap in achievement in mathematics and science between adolescents with and without learning disabilities. The data showed that the gap was reduced for LD adolescents who did not make a school transition until at least ninth grade.
LD, Soc (MS)

Anderson, Johnston; Austin, Keith; Barnard, Tony; Jagger, Janet. (1998). Do third-year mathematics undergraduates know what they are supposed to know? *International Journal of Mathematical Education in Science and Technology*, 29(3), 401-420.

This study examined (n=155) third-year undergraduates in 15 different institutions to determine the extent to which certain core first-year material is retained and understood. Students' misconceptions indicate that foundations laid in the first year are often very flimsy.

Calc, Mscn, Knw (PS)

Anghileri, Julia; Beishuizen, Meindert. (1998). Counting, chunking and the division algorithm. *Mathematics in School*, 27(1), 2-4.

This article compares the approaches to teaching division in Britain and in Holland where different emphasis is placed on the development of mental and written methods.

M/D, CC, Tchg, Arth (EL)

Artzt, Alice F.; Armour-Thomas, Eleanor. (1998). Mathematics teaching as problem solving: A framework for studying teacher metacognition underlying instructional practice in mathematics. *Instructional Science*, 26(1-2), 5-25.

This study uses a 'teaching as problem solving' perspective to examine the components of metacognition underlying the instructional practice of (n=7) experienced and (n=7) beginning secondary-school mathematics teachers.

Mtcg, PS, Tchg (T, SE)

Atkins, Sandra L. (1998). Windows of opportunity: Preservice teachers' perceptions of technology-based alternatives to field experiences. *Journal of Computers in Mathematics and Science Teaching*, 17(1), 95-105.

This study investigates preservice teachers' perceptions of the impact of non-field experiences in shaping their vision of mathematics teaching and describes where preservice teachers were engaged in a number of technology-based activities and asked to complete questionnaires prior to and after the activities.

Tech, TAtt (TE)

Atweh, Bill; Bleicher, Robert E.; Cooper, Tom J. (1998). The construction of the social context of mathematics classrooms: A sociolinguistic analysis. *Journal for Research in Mathematics Education*, 29(1), 63-82.

This study employs sociolinguistics perspectives to investigate the social context of two mathematics classrooms that differed in socioeconomic background and gender of students. It argues that as mathematical knowledge is being constructed in the classroom, student participants are being constructed by the teachers according to their ability in and need for different dialects of mathematics.

Soc, Lang, Gend, Styl (K-12)

Balli, Sandra J. (1998). When mom and dad help: Student reflections on parent involvement with homework. *Journal of Research and Development in Education*, 31(3), 142-146.

This study investigated sixth-grade students' perceptions of parental involvement with homework. Students completed mathematics homework assignments designed to involve parents, then completed surveys examining their experiences. Significant numbers of students believed they did better in school when parents helped with homework.

Soc, Blf (MS)

Barnett, Carne. (1998). Mathematics teaching cases as a catalyst for informed strategic inquiry. *Teaching and Teacher Education*, 14(1), 81-93.

This study examined how specific aspects of cases and the case-discussion process can foster informed, strategic inquiry among elementary mathematics teachers, focusing on development of one's own understanding of mathematics, use of the student perspective for feedback, and a critical examination of alternative views and ideas.

TKnw, Tchg, Comm (EL, TE)

Barton, Bill; Fairhall, Uenuku; Trinick, Tony. (1998). Tikanga reo tatai: Issues in the development of a Maori mathematics register. *For the Learning of Mathematics*, 18(1), 3-9.

This article presents the background, influences, and consequences of a self-conscious mathematics discourse production in New Zealand called Maori Mathematics. It describes some aspects of the movement towards Maori language instruction in mathematics and examines the effects on the language itself.

Lang, Tchg, Ethn (K-12)

Batanero, Carmen; Green, David R.; Serrano, Luis Romero. (1998). Randomness, its meanings and educational implications. *International Journal of Mathematical Education in Science and Technology*, 29(1), 113-123.

This study presents an analysis of the different meanings associated with randomness throughout its historical evolution as well as a summary of research concerning the subjective perception of randomness by children and adolescents.

Prob, Revw (K-12)

Battista, Michael; Clements, Douglas H. (1998). Finding the number of cubes in rectangular cube buildings. *Teaching Children Mathematics*, 4(5), 258-264.

This paper describes typical student strategies for counting cubes in cube buildings and explains why these problems are difficult for students. Suggestions are made about instructional tasks that can help students develop more powerful ways of thinking about such problems. It also lists two action research ideas related to this issue.

NSns, Tchg, Arth (EL)

Battista, Michael T.; Clements, Douglas H.; Arnoff, Judy; Battista, Kathryn; Van Auken Borrow, Caroline. (1998). Students' spatial structuring of 2D arrays of squares. *Journal for Research in Mathematics Education*, 29(5), 503-532.

This study examined students' structuring and enumeration of two-dimensional rectangular arrays of squares. The research concludes that many students do not see row-by-column structure.

Rep, Geom, Lrng (EL)

Baxter, Judith Lee; Majumdar, Dibyen; Smith, Stephen D. (1998). Subsequent-grades assessment of traditional and reform calculus. *PRIMUS*, 8(4), 317-330.

This studies examined the later course grades of students enrolled in freshman calculus taught using traditional texts through the 1994-1995 school year, and the Harvard method which was fully adopted starting in 1995. Analysis indicates that some results were indistinguishable, but some statistically significant patterns were found.

Ach, Calc, Curr, Tchg (PS)

Baxter, Judith Lee; Smith, Stephen D. (1998). Subsequent-grades assessment of pedagogies in remedial mathematics. *PRIMUS*, 8(3), 276-288.

This study examined the grades of students from a remedial mathematics course using four different pedagogies in subsequent mathematics courses and concludes that there were statistically significant patterns.

D/R, Tchg, Ach (PS)

Behr, Merlyn J.; Wachsmuth, Ipke; Post, Thomas. (1998). Rational number learning aids: Transfer from continuous models to discrete models. *Focus on Learning Problems in Mathematics*, 20(1), 64-82.

This study investigated how (n=6) children who have had instruction in rational number concepts based on a continuous manipulative aid are able to transfer their knowledge to accomplish tasks based on a discrete manipulative aid. The report suggests several implications for teaching fraction concepts to children using continuous and discrete manipulative aids.

Frac, Manp, Lrng (K-12)

Bell, Garry; Woo, Jeong Ho. (1998). Probing the links between language and mathematical conceptualization. *Mathematics Education Research Journal*, 10(1), 51-74.

This study investigated the conceptual structures of Year 9 students in Korea and Australia while constructing various geometrical terms. Results indicate that the two samples of students exhibited major differences in definition ranking preferences on angle and in semantic profiles for some geometrical concepts due to the differences in the nature of the Korean and English languages.

CC, Lang, Geom (SE)

Bennett, Kristine; Cavanaugh, Rodney A. (1998). Effects of immediate self-correction, delayed self-correction, and no correction on the acquisition and maintenance of multiplication facts by a fourth grade student with learning disabilities. *Journal of Applied Behavior Analysis*, 31(2), 303-306.

This study compared the effects of immediate self-correction, delayed self-correction, and no correction on the acquisition and maintenance of multiplication facts by a fourth-grade student with learning disabilities. Results indicate that both correct response rate and accuracy were higher when self-corrections were immediate rather than delayed or absent.

M/D, D/R, LD, Assm (EL)

Berry, John; Nyman, Melvin A. (1998). Introducing mathematical modeling skills to students and the use of posters in assessment. *PRIMUS*, 8(2), 103-115.

This report describes the outcomes of an intensive one-month mathematical modeling course and the use of posters in peer assessment of student work.
Assm, Rep, Grpg (PS)

Bethell, Sandra Callis; Miller, Nicolas B. (1998). From an E to an A in first-year algebra with the help of a graphing calculator. *Mathematics Teacher*, 91(2), 118-119.

This case study presents one high school student's experiences in a first-year algebra course and emphasizes the use of technology and how it changed the mathematics curriculum.
Alg, GCal (SE)

Bezuidenhout, Jan. (1998). First-year university students' understanding of rate of change. *International Journal of Mathematical Education in Science and Technology*, 29(3), 389-399.

This study explored first-year students' understanding of fundamental calculus concepts. Analysis of the written and verbal responses to the test items revealed significant misconceptions on which students' mathematical activities were based.
Msen, Calc (PS)

Bielen, Barbara; Malkowska-Zegadlo, Hanna. (1998). Developmental achievements of 7-year-old children in Poland in the light of international tests and the requirements of the Polish language school program. *International Journal of Early Years Education*, 6(2), 185-197.

This study examined language competence and reading comprehension of 7-year olds, focusing on the aims and content of Polish-language teaching in grades 1-3. Discussion includes the relationship between mathematical skills and language competence.
Lang, Soc, Ethn (EC)

Boaler, Jo. (1998). Open and closed mathematics: Student experiences and understandings. *Journal for Research in Mathematics Education*, 29(1), 41-62.

This paper reports three-year case studies of two schools using alternative mathematical teaching approaches. One used the traditional textbook approach and the other used open-ended activities at all times. Students who followed a traditional approach developed a procedural knowledge, while students who learned mathematics in an open project-based environment developed a conceptual understanding.
Styl, Tchg (K-12)

Boelkins, Matthew R.; Pfaff, Thomas J. (1998). Teaching calculus students how to study. *PRIMUS*, 8(3), 253-264.

This study addressed the problem of poor study habits in calculus students and indicated that many students greatly appreciated the added structure, worked harder than in previous courses, and witnessed newfound success as a consequence. Techniques to teach students how to study consistently and effectively are presented.
Ach, Att, Soc, Calc (PS)

Bolte, Linda A. (1998). Integrating and expressing concepts from Calculus I. *PRIMUS*, 8(1), 28-38.

This article describes how constructing concept maps and writing accompanying interpretive essays can be used in a Calculus I course to improve students' understanding of important concepts and help teachers assess students' knowledge.
Calc, Writ, Lrng, Assm (PS)

Borasi, Raffaella; Siegel, Marjorie; Fonzi, Judith; Smith, Constance F. (1998). Using transactional reading strategies to support sense-making and discussion in mathematics classrooms: An exploratory study. *Journal for Research in Mathematics Education*, 29(3), 275-305.

This study explored the mathematical learning potential of four reading strategies grounded in transactional reading theory and illustrated how encouraging mathematics students to talk, write, draw, and enact texts can provide them with concrete ways to construct and negotiate interpretations of what they read.
Lang, Writ, Mtcg, Comm (SE)

Bosse, Michael J.; Nandakumar, N. R. (1998). Calculus ideas generated through cooperative learning. *Mathematics and Computer Education*, 32(1), 52-61.

This study followed (n=3) students who collaboratively discovered a generalization while doing their calculus homework and describes the argument as a play which portrays a relatively natural situation cleansed from unrefined mathematical language, errors, and tangential discussions unrelated to the mathematics of the situation.

Grpg, Calc, Soc (SE)

Boulter, Carol; Marsh, Gwyneth. (1998). What size is it really? *Primary Science Review*, 53, 11-14.

This article explains the work of a primary research group focusing on the practical aspects of the use of scale in science and reports on three studies that looked at the impact of the representation of scale in different areas related to the Standard Assessment Tasks.

Meas, IC, Assm, NSns (EL)

Boulton-Lewis, Gillian M. (1998). Children's strategy use and interpretations of mathematical representations. *Journal of Mathematical Behavior*, 17(2), 219-237.

This paper presents a summary of research, from an information processing perspective, of children's interpretation and use of strategies and representations for place value, subtraction, and addition in the first three years of school.

Rep, Revw, Styl, PlcV, A/S (EL)

Bracey, Gerald E. (1998). An optimal size for high schools? Research. *Phi Delta Kappan*, 79(5), 406.

Using 8th-, 10th-, and 12th-grade data from the 1988 National Education Longitudinal Study, researchers examined achievement growth for schools with 100 to 2,800 students. Mathematics achievement rose as school size increased to 600 students, held steady at 900 students, and then diminished. Students gained more in high-socioeconomic status schools, regardless of school size.

Ach, Soc (SE)

Braten, Ivar. (1998). Cognitive strategies in mathematics, Part I: On children's strategies for solving simple addition problems. *Scandinavian Journal of Educational Research*, 42(1), 5-24.

This paper reviews various models of children's addition strategies. Addition strategies used with poor learners should be comprehensive and include interactions between strategies, knowledge, metacognition, motivation, and social factors.

Phil, A/S, Lrng, Styl (EL)

Brenner, Mary E. (1998). Meaning and money. *Educational Studies in Mathematics*, 36(2), 123-155.

This report reviews concepts of mathematical meaningfulness and compares them to experiences of children learning about money at home and at school and concludes that certain kinds of differences between everyday and school mathematics can make inclusion of everyday mathematical topics in classrooms problematic.

Curr, Soc, Blf (EL)

Broughton, Marilyn; Eleser, Christine B.; Spence, Sarah. (1998). Assessing initial classroom environments and communicative competence of developmental mathematics teachers. *Research and Teaching in Developmental Education*, 14(2), 39-48.

This study used the Individualized Classroom Environment Questionnaire and the Components of Communicative Competence Scale to understand how students perceived their own communication abilities and that of their developmental mathematics teachers in order to identify behaviors that characterize positive classroom situations.

Comm, CIIn (HS)

Cai, Jinfa. (1998). An investigation of U. S. and Chinese students' mathematical problem posing and problem solving. *Mathematics Education Research Journal*, 10(1), 37-50.

This study explored the mathematical problem posing and problem solving of (n=181) U. S. and (n=223) Chinese sixth-grade students. The report indicates that while Chinese students outperformed U. S. students on computational tasks, there were many similarities and differences between U. S. and Chinese students in performing relatively novel tasks.

CC, PS, Arth (MS)

Cai, Jinfa. (1998). Developing algebraic reasoning in the elementary grades. *Teaching Children Mathematics*, 5(4), 225-229.

This study investigated different approaches of students from different cultures to problems and problem solving strategies and suggests ways to encourage students to use algebraic strategies.

CC, PS, Rsch, Alg (EL)

Camacho, Matias; Socas, Martin Manuel; Hernandez, Josefa. (1998). An analysis of future mathematics teachers' conceptions and attitudes towards mathematics. *International Journal of Mathematical Education in Science and Technology*, 29(3), 317-324.

This study used a questionnaire for prospective secondary school teachers to compare different students' opinions. The research indicated that there were no notable differences among these students, but students' notions of the role of the teacher contrast sharply with the role proposed in current educational reforms.

TBlf, TAtt (PS, T)

Campbell, Patricia B.; Wahl, Ellen; Slater, Morton; Iler, Elisabeth; Moeller, Babette; Ba, Harouna; Light, Daniel. (1998). Paths to success: An evaluation of the Gateway to Higher Education program. *Journal of Women and Minorities in Science and Engineering*, 4(2-3), 297-308.

This study revealed significant differences in high school graduation rates, completion of academic high school courses in science and mathematics, strong Scholastic Aptitude Test (SAT) performance, and college attendance between participants in a special program and a cohort of non-participants..

Curr, Ach, Aff (HS)

Carey, Linda M. (1998). Parents as math partners: A successful urban story. *Teaching Children Mathematics*, 4(6), 314-319.

This paper describes a teacher's challenge to help her second-grade students experience early success with mathematics by emphasizing parent involvement in this process.

Soc, Ethn (EC)

Carpenter, Thomas P.; Franke, Megan L.; Jacobs, Victoria R.; Fennema, Elizabeth; Empson, Susan B. (1998). A longitudinal study of invention and understanding in children's multidigit addition and subtraction. *Journal for Research in Mathematics Education*, 29(1), 3-20.

This three-year longitudinal study investigated the development of (n=82) children's understanding of multidigit number concepts and operations in grades 1-3 by using interview processes. It shows children inventing strategies for adding and subtracting and illustrates both what that invention affords and the role that different concepts may play in that invention.

NSns, Styl, Arth, A/S (EL)

Castro, Cesar Saenz. (1998). Teaching probability for conceptual change (La Ensenanza de la Probabilidad por Cambio Conceptual). *Educational Studies in Mathematics*, 35(3), 233-254.

This article presents a theoretical proposal of a methodology for the teaching of probability theory and discusses research using a proposed didactic method with (n=6) Spanish high school students. It found significant differences on all indicators, except for attitudinal change, favoring the treatment group.

Prob, Tchg, Lrnr (K-12)

Cawley, John F.; Parmar, Rene S.; Yan, Wenfan; Miller, James H. (1998). Arithmetic computation performance of students with learning disabilities: Implications for curriculum. *Learning Disabilities Research and Practice*, 13(2), 68-74.

This study examined the arithmetic computation performance of (n=229) normally-achieving students (ages 9 to 14) and (n=101) students with learning disabilities. Results indicated that the students with learning disabilities performed at lower levels and that their progress from one age to another was extremely limited.

LD, Arth (EL)

Chick, Helen. (1998). Cognition in the formal modes: Research mathematics and the SOLO taxonomy. *Mathematics Education Research Journal*, 10(2), 4-26.

This study examined some aspects of mathematical cognition at the highest level of formal functioning and illustrates how the structure of a mathematician's output and its cognitive complexity can be characterized by the Structure of the Observed Learning Outcome (SOLO) taxonomy.

Styl, Lrng, Revw (PS)

Chinnappan, Mohan. (1998). The accessing of geometry schemas by high school students. *Mathematics Education Research Journal*, 10(2), 27-45.

This study examined the nature of prior mathematical knowledge that facilitated the construction of useful problem representations in the domain of geometry. High achievers built schemas that were qualitatively more sophisticated than low achievers, which in turn helped them construct representations that were conducive to understanding the structure of geometry problems.

Gift, Geom, Rep, Knw (HS)

Christou, Constantinos; Philippou, George. (1998). The developmental nature of ability to solve one-step word problems. *Journal for Research in Mathematics Education*, 29(4), 436-442.

This study investigated the effect of mental schemes corresponding to additive and multiplicative situations in the process of interpreting and solving problems and classified relative difficulties of problems according to their situations.

Mtcg, PS, A/S, M/D (K-12)

Cifarelli, Victor V. (1998). The development of mental representations as a problem solving activity. *Journal of Mathematical Behavior*, 17(2), 239-264.

This study examined the development of mental representations in problem solving situations and incorporated a constructivist perspective on learning, including the view that mental representations evolve as mathematical conceptions with first-year college students (n=14). The results suggest an activity-based framework for a theory of representation.

Lrng, PS, Rep, Styl (PS)

Clement, John J. (1998). Expert novice similarities and instruction using analogies. *International Journal of Science Education*, 20(10), 1271-1286.

Presents evidence indicating that spontaneously generated analogies can play a significant role in expert problem solving. The work focuses on an evaluation strategy known as bridging that has been observed in solutions to both science and mathematics problems.

PS, Lrnr (K-12)

Cooney, Thomas J.; Shealy, Barry E.; Arvold, Bridget. (1998). Conceptualizing belief structures of preservice secondary mathematics teachers. *Journal for Research in Mathematics Education*, 29(3), 306-333.

A study of the belief structures of (n=4) pre-service secondary mathematics teachers as they progressed through a four-quarter sequence in mathematics education that included student teaching found that the various ways in which the teachers structured their beliefs helped account for the fact that some beliefs were permeable whereas others were not.

Prsv, TBlf, Tchg (TE, SE)

Cooper, Barry. (1998). Assessing national curriculum mathematics in England: Exploring children's interpretation of key Stage 2 tests in clinical interviews. *Educational Studies in Mathematics*, 35(1), 19-49.

This article discusses recent changes in mathematics education and assessment in England and Wales against the background of research on mathematics performance and assessment and reports findings from qualitative research with 10- and 11-year-olds undertaken with the object of exploring the validity of the pilot pencil and paper tests in mathematics.

Assm, Rsch, Impl (K-12)

Coppe, Sylvie. (1998). Composantes Privees et Publiques du Travail de l'Eleve en Situation de Devoir Surveille de Mathematiques. *Educational Studies in Mathematics*, 35(2), 129-151.

This article presents research on writing assessment situations in mathematics classes with high school students who are following a science-oriented curriculum.

Writ, Assm (SE)

Day, Roger. (1998). An experiment in using the Internet in teaching and learning mathematics. *Journal of Science Education and Technology*, 7(3), 249-258.

This report considers how the World Wide Web is used by mathematics educators and describes a multiphase teaching experiment designed to determine if the World Wide Web is a viable means of accessing course materials.

Comp, Curr, Tchg (ALL)

De Bock, Dirk; Verschaffel, Lieven; Janssens, Dirk. (1998). The predominance of the linear model in secondary school students' solutions of word problems involving length and area of similar plane figures. *Educational Studies in Mathematics*, 35(1), 65-83.

This article reports two closely related studies of students' tendency to use linear models in situations in which they are not applicable. The results provide a convincing demonstration of the predominance of the linear model in secondary students' solutions to this kind of mensurational problem.

Alg, Mscn, PS (SE)

Dekker, Rijkje; Elshout-Mohr, Marianne. (1998). A process model for interaction and mathematical level raising. *Educational Studies in Mathematics*, 35(3), 303-314.

This article presents a process model developed for interaction and mathematical level raising focusing on the individual learning process and relates this model to research. The model is meant to show how level raising can be realized by allowing students to work in small groups on a mathematical problem.

PS, Grpg, Styl (K-12)

DeLong, Matthew; Winter, Dale. (1998). Addressing difficulties with student-centered instruction. *PRIMUS*, 8(4), 340-364.

This study identified and analyzed some recurrent problems with the implementation of cooperative and active learning strategies. The report addresses the use of questions, management of instructor-centered activities, management of in-class group activities, and relinquishing forms of control in the classroom.

Tchg, Grpg, Lrng (ALL)

Dickey, Edwin; Roblyer, M. D. (1997-1998). Technology, NAEP, and TIMSS: how does technology influence our national and international report cards? *Learning and Leading with Technology*, 25(4), 48-51.

This article discusses results examining the use of instructional technology provided by the National Assessment of Educational Progress and the Third International Mathematics and Science Study. Topics include validity and interpretation of results, and what needs to change about how technology is used in education, including adding technology measures.

Tech, Revw, Impl, Rsch (SE)

Dugdale, Sharon; Dekoven, Elyon; Ju, Mi-Kyung. (1998). Computer course enrollment, home computer access, and gender: Relationships to high school students' success with computer spreadsheet use for problem solving in pre-algebra. *Journal of Educational Computing Research*, 18(1), 49-62.

This study examined the effects of home computer access and computer course enrollment on mathematically weak high school students' success in applying computers as a learning resource in a pre-algebra course. The advantage of computer course enrollment was greater for females who had access to home computers than for those who did not.

Comp, Gend, PS, Tech, Alg (HS)

Dugdale, Sharon; LeGare, Owen; Matthews, James I.; Ju, Mi-Kyung. (1998). Mathematical problem solving and computers: A study of learner-initiated application of technology in a general problem-solving context. *Journal of Research on Computing in Education*, 30(3), 239-253.

A study of (n=38) K-12 teachers at the 1996 summer institute of the Northern California Mathematics Project suggested that a learning environment incorporating technology, facilities for sharing computer solutions, and development of skills with software can foster effective and spontaneous learner-initiated use of technology for mathematical investigation and problem solving.

Comp, PS (K-12, T)

Edwards, Laurie D. (1998). Embodying mathematics and science: Microworlds as representations. *Journal of Mathematical Behavior*, 17(1), 53-78.

This paper examined the category of open-ended exploratory computer environments that have been labeled microworlds. Two definitions of microworld are proposed: a structural definition that focuses on design elements shared by the environments, and a functional definition that highlights commonalties in how students learn with microworlds.

Rep, Comp, Lrng (ALL)

Ehnebuske, Jean M. (1998). In the comfort of their own homes: Engaging families in mathematics. *Teaching Children Mathematics*, 4(6), 338-343, 351.

This article presents information about a project involving kindergarten, pre-first-grade children, and their parents called Inventing Maths for Parents and Children and Teachers (IMPACT) and concludes that empowering parents through IMPACT helps children attain mathematical power.

Soc, Aff (EC)

Elias, Joseph S.; Yoder, Zelda. (1998). A case for using computer-assisted learning in mathematics to improve instruction in formal GED programs. *PAACE Journal of Lifelong Learning*, 7, 67-72.

This article suggests that using computer-assisted learning to deliver mathematics instruction for General Educational Development (GED) students would increase achievement through individuation and free class time for developing critical-thinking skills--maximizing the part-time experience of the students.

CAI, D/R, Mtcg (HS)

Embse, Charles Vonder; Yoder, Vernon W. (1998). Multiple representations and connections using technology. *Mathematics Teacher*, 91(1), 62-67.

This article discusses the interconnection among the various modes of the TI-92 calculator (geometry, data graphing, function graphing, and algebra), and how the power of visualization is extended to provide multiple approaches to complex problem situations. It also provides a graphing problem with illustrations and results.

Geom, GCal, Vis, PS (SE)

English, Lyn D. (1998). Children's problem posing within formal and informal contexts. *Journal for Research in Mathematics Education*, 29(1), 83-106.

This research investigated the problem-posing abilities of third-grade children who displayed different profiles of achievement in number sense and novel problem solving. Children had difficulties in posing a range of problems in formal contexts in contrast to informal contexts, and children of different achievement profiles displayed different response patterns.

NSns, PS, Ach (EL)

Ensign, Jacque. (1998). Parents, portfolios, and personal mathematics. *Teaching Children Mathematics*, 4(6), 346-351.

This article presents one successful attempt at connecting in-school and out-of-school mathematical experiences including mathematics portfolios and parents.

Assm, Soc (EL)

Even, Ruhuma. (1998). Factors involved in linking representations of functions. *Journal of Mathematical Behavior*, 17(1), 105-121.

This study focused on the intertwining between the flexibility in moving from one representation to another. The results illustrate how knowledge about different representations is not independent, but is interconnected with knowledge about different approaches to functions, knowledge about the context of the presentation, and knowledge of underlying notions.

Rep, Alg, Lrng (PS)

Falk, Joni; Drayton, Brian. (1998). Many futures: Mentoring middle school girls. *Hands On!*, 21(1), 24-28.

This article describes a pilot program in which seventh- and eighth-grade girls with varied academic histories and cultural backgrounds participated in an after-school club where they learned to use the Internet to communicate with volunteer high school and adult mentors.

Gend, Comp, Aff, Soc (MS)

Fischbein, Efraim; Nachlieli, Talli. (1998). Concepts and figures in geometric reasoning. *International Journal of Science Education*, 20(10), 1193-1211.

This paper argues that geometrical figures are characterized by both conceptual and sensorial properties and investigates the effects of interaction between conceptual and figural components.

Patt, Geom, Styl (HS)

Fisher, Darrell; Rickards, Tony. (1998). Associations between teacher-student interpersonal behavior and student attitude to mathematics. *Mathematics Education Research Journal*, 10(1), 3-15.

This article reports research using a convenient questionnaire designed to allow mathematics teachers to assess teacher-student interpersonal behavior in their classrooms and perceptions of their own teacher-student interpersonal behavior and to reflect on their own teaching.

ClIn, Assm, Tchg, Att, Comm (ALL)

Fitzpatrick, Anne R.; Ercikan, Kadriye; Yen, Wendy M.; Ferrara, Steven. (1998). The consistency between raters scoring in different test years. *Applied Measurement in Education*, 11(2), 195-208.

The consistency between raters over three years of a high-stakes performance assessment was examined in two studies involving a total of approximately 3,000 students in grades three, five, and eight. Results show that raters in different years differ in severity, with raters in mathematics most consistent, and those in language arts least consistent.

Assm (K-12)

Forgione, Pascal D., Jr. (1998). Responses to frequently asked questions about 12th-grade TIMSS. *Phi Delta Kappan*, 79(10), 769-772.

This article responds to the most commonly asked questions and criticisms regarding the Third International Mathematics and Science Study's assessment of students at the end of secondary school. Answers cover differences in age and grade levels, differences in enrollment rates, definitions of the U.S. advanced mathematics population, cultural differences, and relevance of results.

Ach, Assm, CC, Soc (SE)

Forrester, Michael A.; Pike, Christopher D. (1998). Learning to estimate in the mathematics classroom: A conversation-analytic approach. *Journal for Research in Mathematics Education*, 29(3), 334-356.

This article examines the ideas surrounding the teaching and learning of measurement estimation in the classroom. The study focused on two teachers and their pupils during estimation lessons by employing ethnomethodologically informed conversation analysis.

Tchg, Meas, Est, Comm (EL)

Foster, Robin. (1998). Haven't we found out all we can about children's early number? *Mathematics in School*, 27(3), 2-6.

This study examined the early acquisition of number sense. Areas examined include counting, the use of algorithms, practical mathematics, the use of manipulatives, individual differences and pedagogical concerns, and classroom applications.

NSns, Arth, Manp, Tchg (EC)

Franke, Megan Loef; Carpenter, Thomas; Fennema, Elizabeth; Ansell, Ellen; Behrend, Jeannie. (1998). Understanding teachers' self-sustaining, generative change in the context of professional development. *Teaching and Teacher Education*, 14(1), 67-80.

This study investigated changes over four years for (n=3) elementary teachers participating in Cognitively Guided Instruction (CGI), which emphasized students' mathematical thinking and supported teachers through workshops, mentoring, and collaboration. CGI allowed teachers to engage in ongoing practical inquiry directed at understanding their students' thinking, thus helping them to engage in self-sustaining, generative growth.

TKnw, Tchg (EL, T)

Frazier, Julie A.; Morrison, Frederick J. (1998). The influence of extended-year schooling on growth of achievement and perceived competence in early elementary school. *Child Development*, 69(2), 495-517.

This study compared academic and psychosocial skills of kindergartners attending extended-year or traditional programs. Results indicated that at the beginning of the next traditional year, extended-year students outperformed traditional-year students in mathematics, reading, and general knowledge and had higher perceived cognitive competence.

Lrng, Aff, Ach (EC)

Frykholm, Jeffrey A. (1998). Beyond supervision: Learning to teach mathematics in community. *Teaching and Teacher Education*, 14(3), 305-322.

This study examined a program that paired preservice mathematics teachers with doctoral-student mentors during student teaching and joined the dyads to form a community. Data from observations, conferences, interviews, meetings, lesson plans, and journals indicated that traditional roles of students, supervisors, and cooperating teachers changed.

Comm, Tchg, Prsv, TKnw (SE, TE)

Fuchs, Lynn S.; Fuchs, Douglas. (1998). General educators' instructional adaptation for students with learning disabilities. *Learning Disability Quarterly*, 21(1), 23-33.

This report reviews research on mathematics instruction adaptations used by general educators with learning disabled students. After a summary of levels and types of instructional adaptation, the article reviews methods for extending adaptation strategies and studies of teachers' planning methods and associated learning outcomes.

Curr, LD, Tchg, Revw (K-12)

Gal, Iddo; Stoudt, Ashley. (1997-1998). Numeracy: Becoming literate with numbers. *Adult Learning*, 9(2), 13-15.

This report discusses the importance of numeracy with the national focus on global competitiveness and a reemphasis on the importance of lifelong learning. Several initiatives and groups dealing with adult numeracy issues are highlighted.
D/R, NSns, Revw (PS)

Galagedera, Don U. A. (1998). Is remedial mathematics a real remedy? Evidence from learning statistics at tertiary level. *International Journal of Mathematical Education in Science and Technology*, 29(4), 475-480.

This study investigated the influences of the basic mathematics course on success in the elementary statistics course. The report indicates that a working knowledge of algebra and set theory may be a necessary condition for success in elementary statistics but may not be sufficient.
Stat, D/R, Ach (PS)

Geiger, Vince; Galbraith, Peter. (1998). Developing a diagnostic framework for evaluating student approaches to applied mathematics problems. *International Journal of Mathematical Education in Science and Technology*, 29(4), 533-559.

This study developed a diagnostic framework that supports teaching and learning in situations that are suitable for students having difficulty in addressing basic problems.
D/R, Styl, Assm (HS)

Gerber, Sue; Shuell, Thomas J.; Harlos, Carol Ann. (1998). Using the Internet to learn mathematics. *Journal of Computers in Mathematics and Science Teaching*, 17(2-3), 113-132.

A study of (n=4) students who used the Internet to obtain data for an eighth-grade mathematics project for five weeks found that students need adequate preparation in order to achieve optimal benefit from using the Internet.
Comp, Tchg (MS)

Giroux, Jacinthe; Lemoyne, Gisele. (1998). Coordination of knowledge of numeration and arithmetic operations on first grade students. *Educational Studies in Mathematics*, 35(3), 283-301.

This article presents a study designed to develop better understanding of the processes involved in the construction of oral and written symbolic systems and to grasp their role in the elaboration of the modeling function of numbers.
Rep, Arth, Lrng, NSns, Tchg (EC)

Gorgorio, Nuria. (1998). Exploring the functionality of visual and non-visual strategies in solving rotation problems. *Educational Studies in Mathematics*, 35(3), 207-231.

This article discusses solving rotation problems using geometrical properties. It presents an analysis of the functionality and effectiveness of different kinds of strategies as a function of the task's characteristics and describes research to improve geometry teaching.
Vis, Geom, Styl (K-12)

Greenberg, Richard. (1998). Image processing for teaching: Transforming a scientific research tool into an educational technology. *Journal of Computers in Mathematics and Science Teaching*, 17(2-3), 149-160.

This report describes the Image Processing for Teaching project which provided digital image processing to excite students about science and mathematics as they used research-quality software on microcomputers.
Curr, Comp, IC, Matl (K-12)

Hadfield, Oakley D.; Littleton, Charles E.; Steiner, Robert L.; Woods, Emily S. (1998). Predictors of preservice elementary teacher effectiveness in the micro-teaching of mathematics lessons. *Journal of Instructional Psychology*, 25(1), 34-47.

Preservice elementary teachers were videotaped teaching three self-designed microteaching lessons to their peers, and the videotapes were rated by mathematics methods instructors. Mathematics methods course quiz average, mathematics anxiety score, and spatial ability were investigated as potential predictors of videotape ratings.
Tchg, Prsv (EL, TE)

Hambleton, Ian R.; Foster, William H.; Richardson, John T. E. (1998). Improving student learning using the personalised system of instruction. *Higher Education*, 35(2), 187-203.

College mathematics and computer science students in a multimedia variant of the Personalised System of Instruction program obtained higher scores on a meaning orientation subtest of the Approaches to Studying Inventory than students in a traditional class.
Tchg, MMed (PS)

Harskamp, Egbert G.; Suhre, Cor J. M.; van Streun, Anne. (1998). The graphics calculator in mathematics education: An experiment in the Netherlands. *Hiroshima Journal of Mathematics Education*, 6, 13-31.

This article presents an experiment carried out at the University of Groningen where a pretest-posttest design was used and included two experimental conditions with the graphics calculator (TI-81) and one control condition without the calculator. Results point toward a change in teacher instructional behavior and in pupils' problem solving approaches.

GCal, Tchg, Ethn (PS)

Haruta, Mako; Turpin, Mark; McGivney, Ray. (1998). Towards a new precalculus. *AMATYC Review*, 19(2), 26-34.

This report describes the five-year evolution of a multi-sectioned precalculus course for business and health professions majors. The research indicated that students have benefited from the revised course that uses the graphing calculator, calculator-based laboratory, and group work.

GCal, M/CBL, Grpg, Curr, Calc (PS)

Hitt, Fernando. (1998). Difficulties in the articulation of different representations linked to the concept of function. *Journal of Mathematical Behavior*, 17(1), 123-134.

Experimental studies with secondary school students have demonstrated that some representations are more difficult to articulate than others. Fourteen questionnaires were designed in order to explore these difficulties. The results show that, for a given task, the difficulties of teachers are not the same as those of their students.

Rep, Alg (SE, T)

Holmes, Madelyn. (1998). Why do U.S. students know so little math? *Basic Education*, 42(8), 1-2.

This report discusses the results of the Third International Mathematics and Science Study, emphasizing the differences in students' everyday lives in different nations, and describes how these differences can affect mathematics achievement.

Soc, CC, Ach, Assm (EL)

Hudson, Brian. (1998). Group work with multimedia: The role of the computer in mediating mathematical meaning-making. *Journal of Computers in Mathematics and Science Teaching*, 17(2-3), 181-201.

This study investigated the potential of collaborative learning in mathematics using multimedia. The report concludes that the classroom interaction was found to be supported not only by language mediated by the multimedia system, but by other non-verbal tools.

Comm, Grpg, MMed, Tech, Matl (K-12)

Hutton, B. Meriel. (1998). Do school qualifications predict competence in nursing calculations? *Nurse Education Today*, 18(1), 25-31.

This research compared the scores of entering British nursing students (n=77) on a mathematics diagnostic test to their mathematics grades on the General Certificate of Secondary Education exams. Results suggest that advanced-level mathematics is a good predictor of future mathematics performance.

Ach, AdvM (PS)

Janvier, Claude. (1998). The notion of chronicle as an epistemological obstacle to the concept of function. *Journal of Mathematical Behavior*, 17(1), 79-103.

The notion of chronicle is introduced as a variable that changes implicitly with time. The results of a written test showed that 16 percent of a group of college science-oriented students made use of a chronicle to sketch a graph representing a situation featuring a time versus speed relation.

Rep, Alg (PS)

Johnson, Phillip E.; Harris, Mary Kim. (1998). A large-scale schools/higher education collaboration to implement systemic change in mathematics teaching and learning. *International Journal of Mathematical Education in Science and Technology*, 29(5), 697-707.

This study provides information about Mathematics Pathways, a collaborative effort involving schools and higher education institutions in order to bring about improvements in the teaching and learning of mathematics at all levels. The research indicates that students involved in this project showed significant improvement in mathematics compared to those students not involved.

Curr, Tchg, Lrng (K-12, PS)

Jones, Rebecca. (1998). Solving problems in math and science education. *American School Board Journal*, 185(7), 6-20.

The Third International Mathematics and Science Study (TIMSS) shows U. S. 4th graders scoring above the international average in both mathematics and science, 8th graders slipping in both subjects, and 12th graders scoring at or near the bottom. Research indicates high expectations, a focused curriculum, better-prepared teachers, and balanced instruction would improve scores.

CC, Ach, Curr (K-12)

Juhler, Sandra M.; Rech, Janice F.; From, Steven G.; Brogan, Monica M. (1998). The effect of optional retesting on college students' achievement in an individualized algebra course. *Journal of Experimental Education*, 66(2), 125-137.

The effect of optional retesting on the achievement of (n=1,314) college students in an individualized algebra course was studied. A performance improvement was found for about 90 percent of students who had earned a grade of B or lower. Optional retesting appeared to affect initial mastery, but not cumulative mastery.

Alg, Assm (PS)

Kahle, Jane Butler. (1998). Equitable systemic reform in science and mathematics: Assessing progress. *Journal of Women and Minorities in Science and Engineering*, 4(2-3), 91-112.

This study analyzed educational equity in science and mathematics and proposes a practical way to assess equity in systemic reform. The research also developed definitions of equity and equitable education.

Curr, Eqty, Gend, Ethn (ALL)

Kahn, P.E.; Anderson, J. A.; Austin, K.; Barnard, T.; Jagger, J. M.; Chetwynd, A. (1998). The significance of ideas in undergraduate mathematics: A case study of the views of lecturers and students. *Teaching Mathematics and Its Applications*, 17(2), 78-85.

This study considered the extent to which students acquired an understanding of mathematics as a whole and of the relative significance of different parts of mathematics to that whole. Results indicate that many students had not developed such an understanding.

AdvM, Tchg, Att (PS)

Kamii, Constance; Lewis, Barbara A.; Booker, Bobbye M. (1998). Instead of teaching missing addends. *Teaching Children Mathematics*, 4(8), 458-461.

This article presents evidence from data on how well five first-grade classes did without any formal instruction showing that if children's numerical reasoning is strong, then formal instruction of missing addends is unnecessary. It explains the findings in light of Piaget's constructivism and discusses educational implications.

NSns, Lrng, Tchg, A/S (EL)

Kantowski, Mary Grace. (1998). Reflections on the TIMSS report. *Basic Education*, 42(8), 3-6.

This article discusses the results of the Third International Mathematics and Science Study by comparing the results and the nature of the study with those of the Second International Mathematics and Science Study. The article also provides some recommendations for improving mathematics education.

Ach, Curr, Revw, Assm, Tchg (K-12)

Keller, Brian A.; Hirsch, Christian R. (1998). Student preferences for representations of functions. *International Journal of Mathematical Education in Science and Technology*, 29(1), 1-17.

This study developed and validated an instrument for determining student preferences for multiple representations of functions and established baseline data for future research. Students showed preferences for representations of functions which varied between contextualized and noncontextualized settings.

Rep, Calc, Alg (PS)

Kenney, Patricia Ann; Zawojewski, Judith S.; Silver, Edward A. (1998). Marcy's dot pattern. *Mathematics Teaching in the Middle School*, 3(7), 474-477.

This article presents a problem included on the 1992 National Assessment of Educational Progress in mathematics at Grade 8 in the content area of algebra and functions. A set of responses to this problem were collected and examined. The article includes some examples of strategies that students used to determine the answer to the problem.

PS, Styl (MS)

Khoo, Guan-Seng; Koh, Thiam-Seng. (1998). Using visualization and simulation tools in tertiary science education. *Journal of Computers in Mathematics and Science Teaching*, 17(1), 5-20.

This paper describes a study conducted in undergraduate science classes in Singapore using computer modeling and simulation. The use of computer models and simulations proved to be valuable in explaining many aspects of science. Students reported that three-dimensional images helped them in their understanding.

CAI, Vis, Comp, Ethn (PS)

Kim, Simon; Hocevar, Dennis. (1998). Racial differences in eighth-grade mathematics: Achievement and opportunity to learn. *Clearing House*, 71(3), 175-178.

This study found that African-American students (age 13) perceived themselves as having had significantly less exposure to instruction than did European-American students and scored significantly lower in mathematics achievement than did European-American students.

Ethn, Ach, Blf (SE)

Kinney, Carol J. (1997-1998). Building an excellent teacher corps: How Japan does it. *American Educator*, 21(4), 16-23.

This report examines reasons why Japanese teachers seem to attain such high levels of performance as evidenced by the achievement of Japanese students in comparative international studies. Evidence from the Third International Mathematics and Science Study revealed Japan's highly competitive environment coupled with ongoing teacher training and classroom observations.

Insv, Tchg, Revw, Impl (SE)

Klein, Anton S.; Beishuizen, Meindert; Treffers, Adri. (1998). The empty number line in Dutch second grades: Realistic versus gradual program design. *Journal for Research in Mathematics Education*, 29(4), 443-464.

This study compared two experimental programs for teaching mental addition and subtraction in the Dutch second grade (n=275). The article discusses realistic program design and gradual program design.

Curr, A/S, Ethn (EL)

Koehler, Matthew; Lehrer, J. Richard. (1998). Designing a hypermedia tool for learning about children's mathematical cognition. *Journal of Educational Computing Research*, 18(2), 123-145.

This study compared learning in text and hypermedia environments by employing a novel single-subject methodology that afforded an economical means of assessment. Results indicated that participants learned significantly faster using the hypermedia system than they did using text-based materials.

Curr, Comp, Lrng (K-12)

Kordaki, Maria; Potari, Despina. (1998). Children's approaches to area measurement through different contexts. *Journal of Mathematical Behavior*, 17(3), 303-316.

This study focused on 12-year-old children's approaches to area measurement in a project environment. The concept of area measurement carried different cultural dimensions for the children. Moreover, the children used those elements of the concept which fit in with their personal experience and the tasks they encountered.

Meas, Lrng, Soc (EL)

Kota, Saraswathi; Thomas, Michael O. J. (1998). Students' arithmetic preferences: Effect on problem solving ability. *Hiroshima Journal of Mathematics Education*, 6, 33-47.

This article presents data confirming students' arithmetic preferences in the form of left to right translation along with evidence to show the effects of the ordering of data presentation in the problem statements on the problem solving abilities of students.

PS, Lrng, Arth (K-12)

Koyama, Masataka. (1998). Students' representations of fractions in a regular elementary school mathematics classroom. *Hiroshima Journal of Mathematics Education*, 6, 1-11.

This study analyzed students' representations of fractions as they worked on fraction comparison tasks and justified their solutions in a collective classroom activity. It suggests some implications for teacher activities and school mathematics curriculum.

Rep, Frac, Grpg, Ethn (EL)

LeFevre, Jo-Anne. (1998). Among encoding, calculation, and production processes in the multiplication performance of Chinese-speaking adults. *Mathematical Cognition*, 4(1), 47-65.

In this study (n=32) Chinese-speaking adults solved single-digit multiplication problems.

Results indicated that Chinese adults made more errors that indicated interactions between phonological codes activated at encoding and production of answers as compared to samples of English, French, and Dutch-speaking adults from other studies.

CC, M/D (PS)

Lehmann, Joel; Gillman, Rick. (1998). Insights from a semester of collaborative teaching. *PRIMUS*, 8(2), 97-102.

This article presents a summary of pedagogical and administrative insights gained by the authors after a semester of collaborative teaching.

Tchg, TKnw, Impl, Grpg (PS)

Lehrer, Richard; Schauble, Leona. (1998). Reasoning about structure and function: Children's conceptions of gears. *Journal of Research in Science Teaching*, 35(1), 3-25.

Elementary school children were interviewed about how gears move on a gearboard and work in commonplace machines. Children's reasoning became more general, formal, and mathematical as problem complexity increased, suggesting that mathematical forms of reason may develop when they provide a clear advantage over simple causal generalizations.

Styl, Lrng (EL)

Lesser, Lawrence M. (1998). Technology-rich standards-based statistics: Improving introductory statistics at the college level. *T.H.E. Journal*, 25(7), 54-57.

Analysis of data from a redesigned introductory statistics course at the University of Northern Colorado provided insights into the interrelationships and effects of technology and a standards-based approach on mathematics education. The article discusses content standards, integration of educational technology, the course Web site, student attitude survey, and performance data.

Stat, Tech, Curr (PS)

Linchevski, Liora; Kutscher, Bilha. (1998). Tell me with whom you're learning, and I'll tell you how much you've learned: Mixed-ability versus same-ability grouping in mathematics. *Journal for Research in Mathematics Education*, 29(5), 533-554.

This report examines three studies that investigated the effects of teaching mathematics in a mixed-ability setting on student achievement and teacher attitudes. The study concludes that students' achievement need not be compromised in a heterogeneous setting.

Grpg, Ach, TAtt (K-12)

Lloyd, Gwendolyn M.; Wilson, Melvin (Skip). (1998). Supporting innovation: The impact of a teacher's conceptions of functions on his implementation of a reform curriculum. *Journal for Research in Mathematics Education*, 29(3), 248-274.

This research investigated the content conceptions of an experienced high school mathematics teacher and linked those conceptions to their role in the teacher's first implementation of reform-oriented curricular materials during a six-week unit on functions.

TBlf, Tchg, Alg, Curr (HS, T)

Long, Vena M.; Benson, Christine. (1998). Re: Alignment. *Mathematics Teacher*, 91(6), 504-507.

This article discusses new techniques and new approaches to gathering information about student learning. The study examines "Enhancing the Teacher's Role in Assessment", a project in which (n=36) teachers from 11 school districts learned about traditional and alternative assessment.

Assm, Tchg (T)

Ludlow, Larry H. (1998). Scale invariance from a three-dimensional graphical perspective: Visualizing an eigenvector. *Educational and Psychological Measurement*, 58(2), 166-178.

The invariance characteristics of the attitudes toward mathematics and its teaching scale were studied at three time points with (n=50) student teachers. Various three-dimensional graphical analyses were undertaken to show scale invariance in ways not possible through static numerical summaries. Of note is the graphical representation of an eigenvector.

TAtt, Assm, Rep (T)

Lupart, Judy; Wilgosh, Lorraine. (1998). Undoing underachievement and promoting societal advancement of women and girls. *Gifted Education International*, 12(3), 159-169.

This article discusses the underachievement of women and girls and describes a program for gifted Canadian students that brings together

training in high school and college-level mathematics and sciences and better linkages between schools, postsecondary institutions, and the business community. A current research project examining participant achievement is explained.
Ach, Gend, Gift (HS, PS)

Lutfiyya, Lutfi A. (1998). Mathematical thinking of high school students in Nebraska. *International Journal of Mathematical Education in Science and Technology*, 29(1), 55-64.

An instrument developed for measuring mathematical thinking was administered to high school students in Nebraska to determine the effects of class level and gender on mathematical thinking. Results showed significant differences in mathematical thinking due to class level in favor of higher class levels with the exception of grades 11 and 12.
Gend, Styl (SE)

Luxton, R. G.; Last, Graham. (1998). Under-achievement and pedagogy: Experimental reforms in the teaching of mathematics using continental approaches in schools in the London borough of Barking and Dagenham. *Teaching Mathematics and Its Applications*, 17(1), 1-11.

This article presents reform efforts aiming to combat underachievement in mathematics through the introduction of successful Continental pedagogy into the teaching of number concepts.
Ach, Tchg, D/R, Aff, Ethn (EL)

MacGregor, Mollie; Stacey, Kaye. (1998). Cognitive models underlying algebraic and non-algebraic solutions to unequal partition problems. *Mathematics Education Research Journal*, 10(2), 46-60.

This study investigated how problem presentations promoted the construction of different cognitive models in (n=268) school students aged 14-16. The research concluded that the lack of correspondence between a cognitive model of a situation and an algebraic representation of relationships in a problem was a powerful obstacle to the use of algebraic methods.
Rep, Styl, Alg, PS (SE)

Maher, Richard J. (1998). Small groups for general student audiences--2. *PRIMUS*, 8(3), 265-275.

This article presents results obtained from using small groups and cooperative learning in the discussion sessions of large lecture classes in the mathematical sciences. The data indicated this approach worked well.
Grpg, Curr, Tchg (PS)

Malloy, Carol E.; Jones, M. Gail. (1998). An investigation of African American students' mathematical problem solving. *Journal for Research in Mathematics Education*, 29(2), 143-163.

This study examined the problem-solving characteristics, strategy selection and use, and verification actions of (n=24) African American eighth-grade students. It indicated that students displayed approaches attributed to African American learners, specifically the regular use of holistic reasoning.
Soc, PS, Styl, Eqty (SE)

Manning, M. Lee. (1998). Gender differences in young adolescents' mathematics and science achievement. *Childhood Education*, 74(3), 168-171.

This literature review pays particular attention to research that focuses on gender differences in mathematics and science achievement and offers implications for middle school educators addressing young adolescents' gender-specific needs.
Ach, Gend, Revw (MS)

Maqsud, Muhammad. (1998). Effects of metacognitive instruction on mathematics achievement and attitude towards mathematics of low mathematics achievers. *Educational Research*, 40(2), 237-243.

General ability, metacognitive awareness, mathematics achievement, and positive attitudes were all higher for an experimental group of (n=20) South African students with low mathematics achievement who learned metacognitive strategies for mathematics problems. Students were compared to a group of (n=20) students in a control group.
Mtcg, Ethn, Att (MS)

McBee, Maridyth M.; Barnes, Laura L. B. (1998). The generalizability of a performance assessment measuring achievement in eighth grade mathematics. *Applied Measurement in Education*, 11(2), 179-194.

The temporal stability and intertask consistency of an eighth-grade mathematics performance assessment and how task similarity affected the ability to generalize results of the assessments were studied with results from (n=101) eighth graders. Results support the suggestion that large-scale performance assessments be used with considerable caution until they demonstrate better psychometric properties.

Assm, Ach (HS)

McClendon, Crystal; Wigfield, Allan. (1998). Group differences in African American adolescents' achievement-related beliefs about math and science: An initial study. *Journal of Black Psychology*, 24(1), 28-43.

This study examined group differences in the academic achievement beliefs of African American adolescents with (n=102) junior high school students involved in an academic enrichment program. Results show boys had higher beliefs about their abilities and expectations in mathematics and science.

Blf, Ethn, Gend, Aff (MS)

McConaghy, Tom. (1998). Canada's participation in TIMSS. *Phi Delta Kappan*, 79(10), 793, 800.

In the 12th grade portion of the Third International Mathematics and Science Study, Canadian students performed better than other participating G-8 countries. In fact, Canada scored consistently above the international mean for all three age groups tested.

Ach, CC, Ethn (SE)

McDougall, Dennis; Brady, Michael P. (1998). Initiating and fading self-management interventions to increase math fluency in general education classes. *Exceptional Children*, 64(2), 151-166.

This study investigated effects of multiple-component behavioral self-management interventions on mathematics fluency and engaged time of (n=5) fourth-grade students with and without disabilities in general education classrooms. Students increased their mathematics fluency and engaged time, and these continued to improve when the self-management interventions were faded.

LD, Aff (K-4)

McGrath, Beth. (1998). Partners in learning: Twelve ways technology changes the teacher-student relationship. *T.H.E. Journal*, 25(9), 58-61.

This article discusses changes in classroom dynamics when computer technology is incorporated into the curriculum, based on experiences in elementary and secondary school science and mathematics classes.

Comp, Curr (K-12)

McKnight, Curtis C.; Schmidt, William H. (1998). Facing facts in U. S. science and mathematics education: Where we stand, where we want to go. *Journal of Science Education and Technology*, 7(1), 57-76.

This paper discusses appropriate goals for mathematics and science educators to focus on in order to boost academic achievement in the United States. Conclusions are based on data from the Third International Mathematics and Science Study.

Assm, Ach, CC, Revw (K-12)

McLure, Gail T. (1998). High school mathematics course taking and achievement among college-bound students: 1987-1996. *NASSP Bulletin*, 82(598), 110-118.

This study examined evidence of students' increased mathematics course-taking in the American College Testing database. Results indicated students generally took more mathematics courses in 1996, and since 1987, females increased mathematics course-taking and ACT test scores more than did males.

Ach, Gend, AdvM (HS)

Meira, Luciano. (1998). Making sense of instructional devices: The emergence of transparency in mathematical activity. *Journal for Research in Mathematics Education*, 29(2), 121-142.

This paper examines the mathematical sense-making of eighth-grade students as they used physical devices to learn about linear functions and it suggests the concept of transparency as an index of access to knowledge and activities rather than as an inherent feature of objects.

Patt, Rep, Alg, Tech (SE)

Miglietti, Cynthia L.; Strange, C. Carney. (1998). Learning styles, classroom environment preferences, teaching styles, and remedial course outcomes for underprepared adults at a two-year college. *Community College Review*, 26(1), 1-19.

This study compared the performance of (n=61) adult (age 25+) and (n=95) traditionally aged (age 18-24) two-year college students in five remedial English and five remedial mathematics courses. Age accounted for little variance in student expectations, and learner-centered classes had strong relationships with high grades.

D/R, Lrnr (PS)

Millett, Alison; Johnson, David C. (1998). Ofsted inspection of primary mathematics: Are there new insights to be gained? *School Leadership & Management*, 18(2), 239-255.

This article summarizes research focusing on the responses of a small set of British primary schools to inspection of their mathematics program: their anticipation of issues, expectations of findings, and views of how the inspection would contribute to developing good practice.

Assm, Curr, Ethn (EL)

Morin, Victoria A.; Miller, Susan Peterson. (1998). Teaching multiplication to middle school students with mental retardation. *Education and Treatment of Children*, 21(1), 22-36.

This study evaluated the effectiveness of teaching multiplication facts and related word problems using the concrete-representational-abstract teaching sequence and strategy instruction to (n=3) middle school students with mental retardation. Evaluation of the 21 scripted lessons given each student found only four occurrences (out of 63 lessons) of performance below 80 percent.

LD, M/D, Tchg (MS)

Moschkovich, Judit N. (1998). Resources for refining mathematical conceptions: Case studies in learning about linear functions. *Journal of the Learning Sciences*, 7(2), 209-237.

This article describes the refinement of a conception in the domain of linear functions. Examples show how students refine their use of the x-intercept in equations of the form "y=mx+b" by narrowing problem contexts, making connections between conceptions, using a mathematical procedure, and refining verbal descriptions.

Alg, Knw, Lrng (SE)

Mulhern, Fiona; Rae, Gordon. (1998). Development of a shortened form of the Fennema-Sherman Mathematics Attitudes Scales. *Educational and Psychological Measurement*, 58(2), 295-306.

Data from (n=196) Irish school children were analyzed and used to develop a shortened version of the Fennema-Sherman Mathematics Attitudes Scales. Internal consistency estimates of the reliability of scores on the whole scale and each of the subscales of the original and short form were favorable.

Att, Assm (EL)

Mulligan, Joanne; Watson, Jane. (1998). A developmental multimodal model for multiplication and division. *Mathematics Education Research Journal*, 10(2), 61-86.

This report presents an analysis of young students' development of multiplication and division concepts based on a multimodal Structure of the Observed Learning Outcome (SOLO) model. The article describes a SOLO developmental model for multiplication and division in terms of developing structure and associated counting and calculation strategies.

Lrng, M/D, Arth (EL)

Munisamy, Susila; Doraisamy, Logeswary. (1998). Levels of understanding of probability concepts among secondary school pupils. *International Journal of Mathematical Education in Science and Technology*, 29(1), 39-45.

This article discusses the performance of Malaysian secondary school students on a probability test covering various intuitive and taught probability concepts, describes the establishment of a probability concepts hierarchy, and considers probability understanding in relation to independent variables.

Lrng, Prob, Ethn (SE)

Murphy, Teri J.; Stafford, Karen L.; McCreary, Paul. (1998). Subsequent course and degree paths of students in a Treisman-style workshop calculus program. *Journal of Women and Minorities in Science and Engineering*, 4(4), 381-396.

The Merit Workshop Calculus Program, based on Treisman-style workshop calculus, was intended to address the problems of low success rates of students from underrepresented populations and the failure to retain these students in mathematics- and science-based majors. This study concluded that the program had a positive impact for both genders and several ethnic groups.

Calc, Gend, Ethn, Curr (PS)

Mwangi, Wangari; Sweller, John. (1998). Learning to solve compare word problems: The effect of example format and generating self-explanations. *Cognition and Instruction*, 16(2), 173-199.

This experiment compared third graders who had studied two-step arithmetic word problems to those learning through conventional problem solving. The former grouped showed superior test performance.

PS, Arth (EL)

Nemirovsky, Ricardo; Tierney, Cornelia; Wright, Tracy. (1998). Body motion and graphing. *Cognition and Instruction*, 16(2), 119-172.

This study analyzed (n=2) children's use of a computer-based motion detector to make sense of symbolic expressions (Cartesian graphs) and found three themes: (1) efforts to understand graphical responses to body motion; (2) emergent ways of talking and behaving that merge symbols and referents; and (3) new investigation of the motion detector.

Comp, Alg, GCal, Tech (K-12)

Newstead, Karen. (1998). Aspects of children's mathematics anxiety. *Educational Studies in Mathematics*, 36(1), 53-71.

This study focused on mathematics anxiety in nine- to eleven-year-old children and compared the mathematics anxiety of pupils taught in a traditional manner with that of pupils whose teachers adopted an alternative teaching approach that emphasized problem solving and discussion of the pupil's own informal strategies.

Anx, Tchg, PS (MS)

Norton, Stephen J.; Rennie, Leonie J. (1998). Students' attitudes towards mathematics in single-sex and coeducational schools. *Mathematics Education Research Journal*, 10(1), 16-36.

This study found that there were clear differences between boys and girls on the Mathematics as a Male Domain scale with girls being less stereotyped in their perceptions than boys.

Gend, Aff, Soc (SE)

Nunes, Terezinha; Moreno, Constanza. (1998). The signed algorithm and its bugs. *Educational Studies in Mathematics*, 35(1), 85-92.

This study found that deaf children lag behind their hearing cohorts in mathematics achievement tests and investigated the acquisition of an alternative method by (n=6) deaf students.

Tchg, LD, Lrnr, Ach (EL)

O'Callaghan, Brian R. (1998). Computer-intensive algebra and students' conceptual knowledge of functions. *Journal for Research in Mathematics Education*, 29(1), 21-40.

This report examines the effects of the Computer-Intensive Algebra (CIA) and traditional algebra curricula on (n=802) students' understanding of the function concept. Results indicate that CIA students achieved a better understanding of functions and were better at the components of modeling, interpreting, and translating.

Alg, CAI, Lrng (SE)

Odafe, Victor U. (1998). Students generating test items: A teaching and assessment strategy. *Mathematics Teacher*, 91(3), 198-202.

This paper describes how a researcher used student cooperative learning teams to contribute test items, discusses the questions generated by students, and concludes that teachers have the flexibility to encourage students to generate and solve their own problems.

Assm, Grpg (SE)

Olszewski-Kubilius, Paula. (1998). Research evidence regarding the validity and effects of talent search educational programs. *Journal of Secondary Gifted Education*, 9(3), 134-138.

This review of research on gifted students found talent-search scores on Scholastic Assessment Tests at the junior-high level are valid indicators of students who can succeed in courses that are accelerated in terms of content and learning pace. Effects may be especially positive for academically gifted females who pursue mathematics in summer programs.

Gift, Assm, Gend, Revw (SE)

Oppong, Nicholas K.; Russell, Alan. (1998). Using combinations of software to enhance pre-service teachers' critical thinking skills. *Mathematics and Computer Education*, 32(1), 37-43.

The use of multiple software programs in the study of quadratic equations by preservice mathematics teachers enriched students' learning experiences and improved their critical thinking skills.

Comp, Alg, Lrng, Tchg (SE, T)

Ostad, Snorre A. (1998). Developmental differences in solving simple arithmetic word problems and simple number-fact problems: A comparison of mathematically normal and mathematically disabled children. *Mathematical Cognition*, 4(1), 1-19.

This article presents a study that examined the differences between mathematically disabled children and mathematically normal children in a cross-sectional perspective. The research indicates that mathematically disabled children need mathematics instruction to move from a focus on computation to strategy-learning activities.

LD, D/R, Tchg, Arth, Lrnr (EL)

Owens, Kay D.; Clements, M. A. (1998). Representations in spatial problem solving in the classroom. *Journal of Mathematical Behavior*, 17(2), 197-218.

Observations of primary students solving spatio-mathematical problems provided data for categorizing and interpreting their thinking processes. A model was developed relating students' cognitive processing and their responsiveness during problem solving. The roles of responsiveness, visual imagery, and selective attention are described.

PS, Vis, Rep, Styl (EL)

Owens, Kay; Perry, Bob; Conroy, John; Geoghegan, Noel; Howe, Peter. (1998). Responsiveness and affective processes in the interactive construction of understanding in mathematics. *Educational Studies in Mathematics*, 35(2), 105-127.

This article reports that important learning processes emerged during adult mathematics classes in which a teaching approach was used that was compatible with a social constructivist theory of knowing.

Lrng, Att, Tchg (PS)

Padget, S. Yancey. (1998). Lessons from research on dyslexia: Implications for a classification system for learning disabilities. *Learning Disability Quarterly*, 21(2), 167-178.

Specific reading disability/dyslexia is examined as the one type of learning disability for which research results are consistent enough to suggest a model. The implications of this model are considered and three types of learning disabilities are discussed: specific language impairments, specific reading disability/dyslexia, and specific mathematics disability.

LD, D/R, Revw (K-12)

Park, Hae-Seong; Bauer, Scott C.; Sullivan, Lisa Melancon. (1998). Gender differences among top performing elementary school students in mathematical ability. *Journal of Research and Development in Education*, 31(3), 133-141.

This study examined gender differences in the mathematics performance of high-achieving fourth and sixth graders, noting the effects of ethnicity. Scores from 1996 California Achievement Tests indicated that students in both grades showed significant gender differences. There were no interaction effects of gender by ethnicity.

Gend, Ethn, Ach, Soc (EL)

Pauli, P.; Bourne, L. E., Jr.; Birbaumer, N. (1998). Extensive practice in mental arithmetic and practice transfer over a ten-month retention interval. *Mathematical Cognition*, 4(1), 21-46.

In this study participants were trained on nine single-digit multiplication problems over three sessions and transfer of practice was tested with nine different multiplication problems in the fourth session for half the participants. The study examined problem-size, transfer, and retention effects within a network-interference model of mental arithmetic and the principle of procedural reinstatement.

Arth, Tchg (EL)

Pepper, Kristine L.; Hunting, Robert P. (1998). Preschoolers' counting and sharing. *Journal for Research in Mathematics Education*, 29(2), 164-183.

This study examined strategies used by preschool children to subdivide items and focused on the relationship between counting and sharing. It indicated that children exhibited alternative strategies with pauses between allocations suggesting a representation of lots corresponding to the number of recipients.

NSns, Lrng, Styl (EC)

Pereira-Mendoza, Lionel; Kaur, Berinderjeet. (1998). Statistics education in Singapore schools. *Teaching Statistics*, 20(2), 38-42.

This article provides a perspective of statistics education in Singapore by presenting information on curriculum. The report discusses some results from projects in order to show what the students are able to do with statistical information.

CC, Stat, Tchg, Revw (SE)

Peressini, Dominic D. (1998). The portrayal of parents in the school mathematics reform literature: Locating the context for parental involvement. *Journal for Research in Mathematics Education*, 29(5), 555-582.

This report analyzed how literature has created the accepted discourse for mathematics education reform and how the professionalization of teachers has distanced parents from schools and led to conflict between parents and mathematics educators.

Soc, Revw (K-12)

Peressini, Dominic D.; Knuth, Eric J. (1998). Why are you talking when you could be listening? The role of discourse and reflection in the professional development of a secondary mathematics teacher. *Teaching and Teacher Education*, 14(1), 107-125.

This study used observation and interviews to compare the discourse in workshop sessions that were part of a discrete-mathematics professional development project for secondary mathematics teachers with the discourse in one participating teacher's high school mathematics classroom.

Tchg, Comm, Insv (T, SE)

Peters, Sally. (1998). Playing games and learning mathematics: The results of two intervention studies. *International Journal of Early Years Education*, 6(1), 49-58.

Results from two studies showed that games appeared to be the most effective way of enhancing children's mathematics learning when a sensitive adult was available to support and extend the children's learning as they played.

NSns, Lrng, Soc (EC)

Philippou, George N.; Christou, Constantinos. (1998). The effects of a preparatory mathematics program in changing prospective teachers' attitudes towards mathematics. *Educational Studies in Mathematics*, 35(2), 189-206.

This article reports the results of a study aimed at changing prospective teachers' attitudes towards mathematics using a mathematics preparatory program designed and implemented over three years and employing questionnaires and interviews.

TAtt, Prsv (TE)

Pillay, Hitendra; Wilss, Lynn; Boulton-Lewis, Gillian. (1998). Sequential development of algebra knowledge: A cognitive analysis. *Mathematics Education Research Journal*, 10(2), 87-102.

This study examined arithmetic and algebra knowledge from a cognitive perspective in an effort to determine what constitutes a pre-algebraic level of understanding. The article presents results of a longitudinal study designed to investigate students' readiness for algebra and proposes a model for the transition from arithmetic to pre-algebra to algebra.

Alg, Knw, Arth, Curr (SE)

Pitcher, Neil. (1998). Educational software in mathematics: Developing and using a mathwise module. *International Journal of Mathematical Education in Science and Technology*, 29(5), 709-720.

This study examined issues relevant to the development, implementation, and evaluation of educational software in mathematics in the particular context of a Mathwise module covering the topic of complex numbers.

CAI, Matl, AdvM, Curr (SE)

Pong, Suet-ling. (1998). The school compositional effect of single parenthood on 10th-grade achievement. *Sociology of Education*, 71(1), 23-42.

This study used data from the National Education Longitudinal Study (NELS) to reveal a detrimental contextual effect on 10th-grade mathematics and reading achievement associated with attending a school with a high concentration of children from single-parent homes.

Ach, Soc (SE)

Ponza, Maria Victoria. (1998). A role for the history of mathematics in the teaching and learning of mathematics: An Argentinian experience. *Mathematics in School*, 2(4), 10-13.

This article describes an interdisciplinary project with 13-year-old pupils that includes the history of mathematics. The study concluded that many changes were observed in the attitudes of pupils towards mathematics and that this project enabled pupils to see human aspects of mathematics.

Att, IC, Ethn, Soc (K-12)

Qi, Donald S. (1998). An inquiry into language-switching in second language composing processes. *Canadian Modern Language Review*, 54(3), 413-435.

This study investigated factors influencing language-switching behavior in the thinking processes of a bilingual person engaged in second-language writing, based on a review of the literature and a case study in which an individual performed three tasks using think-aloud protocols including mathematical problem solving in English.

Lang, Styl, PS (ALL)

Quinn, Robert J. (1998). The influence of mathematics methods courses on preservice teachers' pedagogical beliefs concerning manipulatives. *Clearing House*, 71(4), 236-238.

This study found that an elementary mathematics methods course provided preservice teachers with important knowledge and experience concerning the use of manipulatives. Preservice teachers learned mathematical content through the use of manipulatives in the course and were concerned that difficulties might impede their ability to use manipulatives.

Manp, Tchg, TKnw, Prsv, TAtt (TE, EL)

Quinn, Robert J. (1998). Technology: Preservice teachers' beliefs and the influence of a mathematics methods course. *Clearing House*, 71(6), 375-377.

This study finds that a mathematics methods course provided preservice teachers with knowledge and experience concerning the use of technological aids and also that preservice teachers (1) learned mathematical content through their experiences; (2) were concerned over difficulties incorporating these aids into the classroom; and (3) wanted to learn more about using them.

Tech, Prsv, Comp, Cltr (TE, EL)

Rahim, Medhat H.; Olson, Alton. (1998). Qualitative patterns in plane geometry. *Journal of Mathematical Behavior*, 17(3), 373-389.

The purpose of this study was to identify and explain students' geometric thinking processes in judging, visually and through cutting and covering, whether or not area equivalent polygonal regions of different shapes were congruent by pieces. Results showed that a general procedural pattern emerged in 8th grade students' responses.

Geom, Vis, Lrng (MS)

Raymond, Anne M.; Raymond, Francis E., III. (1998). A means of encouraging women in mathematical sciences. *Contemporary Education*, 69(3), 130-133.

To counter the traditional inequitable mathematics experiences for elementary school girls, Indiana State University created an annual Mathematics Day with Girls Scouts. Girls of age six to seven years participate in various fun mathematical activities, rotating through mathematics learning stations developed by preservice elementary mathematics teachers. The girls had fun, positive experiences.

Gend, Eqty (EL)

Rettig, Michael D.; Canady, Robert Lynn. (1998). High failure rates in required mathematics courses: Can a modified block schedule be part of the cure? A "Bulletin" special. *NASSP Bulletin*, 82(596), 56-65.

This report examines allowances for variable amounts of time for completion of Algebra I. This study suggested that schools address four issues: curriculum, instructional methods, assessment, and scheduling.

Alg, Soc, Curr, D/R (HS)

Reys, Barbara J.; Reys, Robert E. (1998). Computation in the elementary curriculum: Shifting the emphasis. *Teaching Children Mathematics*, 5(4), 236-241.

This report reviews messages regarding what and how computation should be developed in elementary school mathematics and offers a proposal for a K-8 computation curriculum.

Arth, Curr, Revw (EL)

Reys, Robert E. (1998). Computation versus number sense. *Mathematics Teaching in the Middle School*, 4(2), 110-112.

This article presents two different tests from research for teachers to conduct in their classrooms to gain insight into their students' number sense.

Assm, NSns, CC (MS)

Reys, Robert E.; Yang, Der-Ching. (1998). Relationship between computational performance and number sense among sixth- and eighth-grade students in Taiwan. *Journal for Research in Mathematics Education*, 29(2), 225-237.

This study investigated the number sense of Taiwanese sixth- and eighth-grade students. It indicated that student performance on questions requiring written computation was significantly better than on similar questions relying on number sense.

NSns, Est, Ethn, Frac (MS)

Riley, Richard W. (1998). Executive summary of mathematics equals opportunity. *Mathematics Education Dialogues*, Mar 1998, 3, 7.

This report contains an executive summary prepared for the U. S. Secretary of Education with information about the mathematics and science courses that students take in middle school and high school and their effects on student achievement.

Ach, Curr, Revw (SE)

Rodgers, Kathy V.; Wilding, William G. (1998). Studying the placement of students in the entry-level college mathematics courses. *PRIMUS*, 8(3), 203-208.

This report indicates that the predicted success of students in college algebra is related to explanatory variables using a linear model and recommends advising cut-off scores in terms of student success rates as well as the mission statement and philosophy of the university.

Ach, D/R, Alg (PS)

Rogers, Judith A. (1998). Refocusing the lens: Using observation to assess and identify gifted learners. *Gifted Education International*, 12(3), 129-144.

This paper describes the DISCOVER assessment process, a method designed to identify gifted learners by documenting students' problem-solving abilities in several of Gardner's multiple intelligences, including spatial, mathematical, linguistic, intrapersonal, bodily kinesthetic, and interpersonal.

Assm, Gift, Styl (K-12)

Ross, John A.; Hogaboam-Gray, Anne. (1998). Integrating mathematics, science, and technology: Effects on students. *International Journal of Science Education*, 20(9), 1119-1135.

This study compared a school using ninth-grade integrated mathematics, science, and technology to a school in the same district that taught the same courses separately. The report discusses the benefits of an integrated learning setting for the students.

IC, Tech (SE)

Ruffell, Moyra; Mason, John; Allen, Barbara. (1998). Studying attitude to mathematics. *Educational Studies in Mathematics*, 35(1), 1-18.

This article presents eight small studies of attitude that are carried out across the educational phases and reports that attitude is seen as a complex notion at best.

TAtt, Att, Revw (K-12)

Saenz-Ludlow, Adalira; Walgamuth, Catherine. (1998). Third graders' interpretations of equality and the equal symbol. *Educational Studies in Mathematics*, 35(2), 153-187.

This study analyzed the interpretations of equality and the equal symbol of third grade children who participated in a year-long, whole class socio-constructivist teaching experiment.

Arth, Lrng, Tchg (EL)

Sastre, Maria Teresa Munoz; Mullet, Etienne. (1998). Evolution of the intuitive mastery of the relationship between base, exponent, and number magnitude in high-school students. *Mathematical Cognition*, 4(1), 67-77.

This study investigated how students familiar with exponentiation intuitively combined information about bases and exponents in expressions of the type a^n to estimate the magnitude of these expressions. Analyses conducted on the data revealed at least five different models of magnitude estimation.

Alg, Est, Rep (HS)

Sato, Jun. (1998). Effects of learners' perceptions of utility and costs, and learning strategy preferences. *Japanese Journal of Educational Psychology*, 46, 367-376.

This study examined the effects of learners' perceptions of utility and costs and of their learning strategy preferences on the use of learning strategies. Learners who perceived high utility and preferred a learning strategy, tended to use the learning strategy frequently, whereas those perceiving high costs tended not to use them.

Styl, Lrnr (HS)

Schliemann, Analucia D.; Araujo, Claudia; Cassunde, Maria Angela; Macedo, Suzana; Niceas, Lenice. (1998). Use of multiplicative commutativity by school children and street sellers. *Journal for Research in Mathematics Education*, 29(4), 422-435.

This study analyzed the use of the commutative property for solving multiplication problems by children who learned about multiplication in schools and by street vendors who solved multiplication problems through repeated addition. The research indicated that the use of commutativity to solve multiplication problems is closely related to the use of multiplication.

Styl, M/D, CC, Arth (EL)

Segal, Judith. (1998). Learners' difficulties with induction proofs. *International Journal of Mathematical Education in Science and Technology,* 29(2), 159-177.

Several studies designed to investigate the nature of learners' difficulties with the proof technique of structural induction found that a constant factor was the role of implication in induction and concludes that the conceptual gap between knowing how to apply the principle of induction and understanding why it is valid was a difficulty.

Mscn, Prf, AdvM (PS)

Selter, Christoph. (1998). Building on children's mathematics--A teaching experiment in grade three. *Educational Studies in Mathematics,* 36(1), 1-27.

This experiment used Treffers' idea of vertical mathematization in a third grade mathematics classroom. Included is a discussion of the central components of the developed course and examples of children's own productions.

Curr, Lrng (EC)

Setati, Mamokgethi. (1998). Code-switching in a senior primary class of second-language mathematics learners. *For the Learning of Mathematics,* 18(1), 34-40.

This study investigated the different ways in which a multilingual senior primary mathematics teacher uses code-switching when teaching mathematics to second-language learners who share the first language of the instructor.

Lang, Tchg, Ethn (T, EL)

Shama, Gilli. (1998). Understanding periodicity as a process with Gestalt structure. *Educational Studies in Mathematics,* 35(3), 255-281.

This report presents a two-phase investigation of how Israeli students understand the concept of periodicity and discusses related research with teachers and students (n=895) employing both qualitative and quantitative research methodologies. Students' errors and preferences are discussed with reference to the frameworks of understanding periodicity as a process and Gestalt theory.

Styl, Ethn (K-12)

Shaver, Ann V.; Walls, Richard T. (1998). Effect of Title I parent involvement on student reading and mathematics achievement. *Journal of Research and Development in Education,* 31(2), 90-97.

This study examined the impact of parent-school involvement on Title I second- through eighth graders' reading and mathematics achievement, noting the effect of student gender and socioeconomic status (SES). Included are student testing data, SES data, and information on parent academic success.

Soc, Gend, Aff (K-8)

Shield, Mal; Galbraith, Peter. (1998). The analysis of student expository writing in mathematics. *Educational Studies in Mathematics,* 36(1), 29-52.

This article presents a scheme for coding the parts of written mathematical presentations. Also included is a description of a study done with eighth grade students, the findings of which reveal that the writing closely resembled the style of the typical mathematics textbook used by the students.

Writ, Matl (MS)

Siegel, Marjorie; Borasi, Raffaella; Fonzi, Judith. (1998). Supporting students' mathematical inquiries through reading. *Journal for Research in Mathematics Education,* 29(4), 378-413.

This study identified specific functions that reading, in combination with writing and talking, can serve in mathematical inquiries and contributes to a better understanding of how inquiry experiences can be planned and supported in secondary mathematics classrooms.

Writ, Lang, Comm, Mtcg (SE)

Slavit, David. (1998). Three women's understandings of algebra in a precalculus course integrated with the graphing calculator. *Journal of Mathematical Behavior,* 17(3), 355-372.

This study investigated the role of function in a precalculus classroom which incorporated the graphing calculator in the instructional process. It was found that the students involved in the study entered the graph intensive course with predominantly symbolic notions of algebra, in part due to prior instruction.

GCal, Calc, Gend, Alg (SE)

Smith, Frances M.; Hausafus, Cheryl O. (1998). Relationship of family support and ethnic minority students' achievement in science and mathematics. *Science Education,* 82(1), 111-125.

This study identified those aspects of family support that have the most influence on students' learning in mathematics and science and examined the relationship of the mother's support and participation to the eighth grade minority child's score on standardized tests.

Ach, Soc, Ethn (MS)

Smith, Margaret Schwan; Stein, Mary Kay. (1998). Selecting and creating mathematical tasks: From research to practice. *Mathematics Teaching in the Middle School*, 3(5), 344-350.

This article focuses on the selection and creation of mathematical tasks, drawing on QUASAR's research on mathematical tasks and experiences with teachers and teacher educators.

Tchg, Revw (K-12)

Spence, Mary. (1998). Measurement in primary science and maths. *Primary Science Review*, 53, 6-9.

This study examined how (n=6) children aged 10-11 years explored the concept of force and reveals a gap between the ways that measurement is used in mathematics and the ways it is used in science.

IC, Meas, NSns (EL)

Stacey, Kaye; Steinle, Vicki. (1998). Refining the classification of students' interpretations of decimal notation. *Hiroshima Journal of Mathematics Education*, 6, 49-69.

This article reports the results of a study on (n=1,853) students from grade 4 to year 10 where the larger number from pairs of decimals was chosen. Test results and interviews showed more than 10 ways in which students interpreted decimal numbers.

Frac, Styl, Ethn (K-12)

Steele, Diana F. (1998). Look who's talking: Discourse in a fourth-grade class. *Teaching Children Mathematics*, 4(5), 286-292.

This article presents a lesson in which discourse revealed how the teacher helped students learn by constructing their own conceptual understanding of geometric shapes and illustrates how the teacher facilitated an atmosphere in which students took responsibility for their own learning.

Comm, Geom, Tchg (EL)

Steffe, Leslie P.; Cobb, Paul. (1998). Multiplicative and divisional schemes. *Focus on Learning Problems in Mathematics*, 20(1), 45-61.

This article discusses the development of multiplicative and divisional schemes within a constructivist framework and illustrates child thinking and child methods relative to the meanings of these operations using interviews with children.

Lrng, M/D, Arth, Curr (EL)

Stein, Mary Kay; Smith, Margaret Schwan. (1998). Mathematical tasks as a framework for reflection: From research to practice. *Mathematics Teaching in the Middle School*, 3(4), 268-275.

This article describes the Quantitative Understanding: Amplifying Student Achievement and Reasoning (QUASAR) national reform project aimed at studying and fostering the development and implementation of enhanced mathematics instructional programs.

Tchg, TKnw, Curr (TE)

Stevenson, Harold W. (1998). A study of three cultures: Germany, Japan and the United States--an overview of the TIMSS case study project. *Phi Delta Kappan*, 79(7), 524-529.

This report discusses case studies from the United States, Germany, and Japan included in the Third International Mathematics and Science Study (TIMSS). Highlighted areas include national standards, teacher training and working conditions, attitudes toward dealing with ability differences, and the place of school in adolescents' lives.

Impl, Revw, Prsv, TAtt, Att (SE)

Stillman, Gloria A.; Galbraith, Peter L. (1998). Applying mathematics with real world connections: Metacognitive characteristics of secondary students. *Educational Studies in Mathematics*, 36(2), 157-195.

This article reports an intensive study of the problem-solving activity of female students at the senior secondary level. The study focused on the mathematical processing and the underlying cognitive and metacognitive activities that led to that processing.

Mtcg, Gend, PS, Lrnr (HS)

Stipek, Deborah; Salmon, Julie M.; Givvin, Karen B.; Kazemi, Elham; Saxe, Geoffrey; MacGyvers, Valanne L. (1998). The value (and convergence) of practices suggested by motivation research and promoted by mathematics education reformers. *Journal for Research in Mathematics Education*, 29(4), 465-488.

This study of instructional practices suggested in the literature on achievement motivation and practices promoted in mathematics instruction reform literature positively affected students' motivation and conceptual learning related to fractions. Research focused on fourth- through sixth-grade students (n=624) and their teachers (n=24).

Curr, Aff, Frac, Impl (MS)

Tanner, Michael L.; Casados, Leah. (1998). Promoting and studying discussions in math classes. *Journal of Adolescent & Adult Literacy*, 41(5), 342-350.

Study of a high school mathematics teacher's efforts to implement a mathematics discussion activity showed that use of the Socratic Seminars method improved students' attitudes toward reading mathematics, infused the language of math into the classes, and increased student participation in class as students became active learners and critical thinkers.

Oral, Tchg, Mtcg, Att (HS)

Terao, Atsushi; Kusumi, Takashi. (1998). A review of knowledge acquisition promoting transfer in mathematical problem solving. *Japanese Journal of Educational Psychology*, 46, 461-472.

This review focuses on knowledge acquisition which promotes transfer in mathematical problem solving. It distinguishes between three types of knowledge: knowledge based on examples, knowledge based on solution structures, and knowledge based on structure generation.

PS, Styl, Revw (SE)

Tirosh, Dina; Even, Ruhama; Robinson, Naomi. (1998). Simplifying algebraic expressions: Teacher awareness and teaching approaches. *Educational Studies in Mathematics*, 35(1), 51-64.

This study investigated (n=4) seventh-grade teachers' awareness of students' tendency to conjoin or 'finish' open expressions and teachers' ways of coping with this tendency.

Alg, TAtt, Tchg (MS)

Tirosh, Dina; Stavy, Ruth; Cohen, Shmuel. (1998). Cognitive conflict and intuitive rules. *International Journal of Science Education*, 20(10), 1257-1269.

This study examined the role of intuitive rules in science and mathematics education. The report describes the effect of two intuitive rules of students in grades 7-12 as they perform tasks related to mathematical and physical objects.

IC, Lrng, PS (SE)

Underhill, Robert G.; Fennell, Francis; Engelhardt, Jon; Bright, George W.; Burton, Grace; Uprichard, Edward. (1998). Research council report: Significant ideas in diagnosis. *Focus on Learning Problems in Mathematics*, 20(1), 35-43.

This article presents the final report of the President of the Research Council for Diagnostic and Prescriptive Mathematics which examines research issues in diagnosis and prescription. The report identifies major issues related to diagnosis and prescription which could serve as a research agenda for the next two or three decades.

Rsch, D/R (K-12)

Wade, Barrie; Moore, Maggie. (1998). An early start with books: Literacy and mathematical evidence from a longitudinal study. *Educational Review*, 50(2), 135-145.

Inner-city families with babies received books under Project Bookstart. Follow-up of (n=41) children in their first year of school showed that, compared with 41 who did not participate in the project, participants were significantly farther ahead in six measures of literacy and numeracy.

Lang, Nsns, Soc (EC)

Waldron, Nancy L.; McLeskey, James. (1998). The effects of an inclusive school program on students with mild and severe learning disabilities. *Exceptional Children*, 64(3), 395-405.

This investigation used a curriculum-based measure to examine the effects of an inclusive school program. The study found that elementary students with learning disabilities (n=71) in the program made significantly more progress in reading and comparable progress in mathematics when compared to students (n=73) who were provided services in resource classes.

LD, Ach, Curr (EL)

Warrington, Mary Ann; Kamii, Constance. (1998). Multiplication with fractions: A Piagetian, constructivist approach. *Mathematics Teaching in the Middle School*, 3(5), 339-343.

This paper presents a teacher's experience with teaching fractions by employing the constructivist approach.

Frac, M/D, Tchg (EL)

Watanabe, Reijirou; Sakuma, Tatsuya. (1998). A study on structures of children's arithmetic anxiety and methods of teacher's supports: Examination from social support. *Japanese Journal of Educational Psychology,* 46, 184-192.

This study investigated 5th and 6th graders' arithmetic anxiety and methods of teacher supports.

Arth, Anx, Soc (MS)

Watson, Jane; Moritz, Jonathan. (1998). Longitudinal development of chance measurement. *Mathematics Education Research Journal,* 10(2), 103-127.

This study explored understanding of chance measurement and how this developed over time through the analysis of response data collected in 1993, 1995, and 1997 and analyzed this data to document changes in levels of observed student outcomes.

Knw, Prob, Stat (K-12)

Wenstrom, Jane; Martin, Kathleen; King, Susan. (1998). Thinking about the preparation of teachers of elementary school mathematics. *Humanistic Mathematics Network Journal,* 17, 12-15.

This article discusses concerns about the preparation of elementary school mathematics teachers and describes the efforts of faculty in mathematics and teacher education at Mississippi University for Women to improve the preparation of teachers of school mathematics.

Prsv, TKnw, Curr (TE, EL)

Wertheimer, Richard; Zinga, Mario. (1998). Applying chaos theory to school reform. *Internet Research,* 8(2), 101-114.

This paper presents a case study of the ideology, strategies, and process of the Common Knowledge: Pittsburgh project in its attempt at school reform in an urban school district. A conceptual framework based on chaos theory, as developed in mathematics and science, is used for discussing educational reform efforts.

Phil, Curr (K-12)

Whitenack, Joy M.; Knipping, Nancy; Novinger, Sue; Coutts, Linda; Reys, Barbara. (1998). Using technology to foster teachers' reflections about children's arithmetical thinking. *Teaching Children Mathematics,* 4(8), 484-487.

This article presents information on a project to promote young students' mathematical thinking in which teachers attempt to explore ways to foster students' mathematical development by watching a CD-ROM containing student interviews.

Tech, TKnw, Lrng, Arth (T, EL)

Wiegel, Heide G. (1998). Kindergarten students' organization of counting in joint counting tasks and the emergence of cooperation. *Journal for Research in Mathematics Education,* 29(2), 202-224.

This study investigated possibilities for and manifestations of collaborative work with pairs of kindergarten students as they worked on tasks designed to promote early number development. Students generated four strategies and three themes emerged from the analysis of the cooperative solutions.

NSns, Grpg, Lrng, Styl (EC)

Wiliam, Dylan. (1998). What makes an investigation difficult? *Journal of Mathematical Behavior,* 17(3), 329-353.

In this article it is argued that generic marking guides are unlikely to be successful, and that teachers engaged in assessing school-based work need to take into account features of the specific activity in which the student engages. A corpus of 20,000 student responses to 80 investigative tasks were analyzed to produce a framework of task-factors.

Assm (ALL)

Williams, Carol G. (1998). Using concept maps to assess conceptual knowledge of function. *Journal for Research in Mathematics Education,* 29(4), 414-421.

This study examined the value of concept maps as instruments for assessment of conceptual understanding, using the maps to compare the knowledge of function that experts and two groups of students (n=28)--traditional and nontraditional--enrolled in university calculus classes held.

Lrng, Assm, Alg, Curr (PS)

Wohlhuter, Kay A. (1998). Geometry classroom pictures: What's developing? *Mathematics Teacher,* 91(7), 606-609.

This article presents situations from geometry classrooms resulting from observations of (n=5) geometry teachers and their classes. The observations indicate that some teachers are influenced by their beliefs, professional development experiences, and views about their own teaching.

TBlf, Insv, Tchg, Geom (T, HS)

Wolters, Christopher A.; Pintrich, Paul R. (1998). Contextual differences in student motivation and self-regulated learning in mathematics, English, and social studies classrooms. *Instructional Science*, 26(1-2), 27-47.

This study examined contextual differences in student motivation and self-regulated learning in seventh- and eighth-grade mathematics, social studies, and English. Results revealed differences by subject area and gender in motivation and cognitive strategy use variables, but not in regulatory strategy use or academic performance.

Aff, Gend, Styl (SE)

Young, Donald B.; Dougherty, Barbara; Lai, Morris K.; Matsumoto, Annette. (1998). Addressing equity through curriculum development and program evaluation. *Journal of Women and Minorities in Science and Engineering*, 4(2-3), 269-281.

This article reports on progress in incorporating equity indicators into curriculum development and program evaluation design with specific reference to the completed program evaluation of the Hawaii Algebra Learning Project.

Curr, Eqty, Alg (SE)

Zazkis, Rina. (1998). Odds and ends of odds and evens: An inquiry into students' understanding of even and odd numbers. *Educational Studies in Mathematics*, 36(1), 73-89.

This research examines the differences in preservice elementary school teachers' perceptions between divisibility by two, or evenness, and divisibility by another number. The equivalence of the number properties of being even and being divisible by two was not taken for granted by the subjects.

NSns, TKnw, Prsv (EL, T)

Zbiek, Rose Mary. (1998). Prospective teachers' use of computing tools to develop and validate functions as mathematical models. *Journal for Research in Mathematics Education*, 29(2), 184-201.

This study explored the strategies used by (n=13) prospective secondary mathematics teachers to develop and validate functions as mathematical models of real-world situations. It concluded that strategy choice was influenced by task characteristics and interactions with other student modelers.

TKnw, Alg, Comp, Tech (SE, T)

Journals Cited

Adult Learning
AMATYC Review
American Educator
American School Board Journal
Applied Measurement in Education (2)
Basic Education (2)
Canadian Modern Language Review
Child Development
Childhood Education
Clearing House (3)
Cognition and Instruction (2)
Community College Review
Contemporary Education
Education and Treatment of Children
Educational and Psychological Measurement (2)
Educational Research
Educational Review
Educational Studies in Mathematics (20)
Equals Mathematics and Special Educational Needs
Exceptional Children (2)
Focus on Learning Problems in Mathematics (3)
For the Learning of Mathematics (2)
Gifted Education International (2)
Hands On!
Higher Education
Hiroshima Journal of Mathematics Education (4)
Humanistic Mathematics Network Journal
Instructional Science
Instructional Science
International Journal of Early Years Education (2)
International Journal of Mathematical Education in Science and Technology (13)
International Journal of Science Education (4)
Internet Research
Japanese Journal of Educational Psychology (3)
Journal for Research in Mathematics Education (24)
Journal of Adolescent & Adult Literacy
Journal of Applied Behavior Analysis
Journal of Black Psychology
Journal of Computers in Mathematics and Science Teaching (6)
Journal of Educational Computing Research (2)
Journal of Experimental Education
Journal of Instructional Psychology
Journal of Learning Disabilities
Journal of Mathematical Behavior (11)
Journal of Research and Development in Education (3)
Journal of Research in Science Teaching
Journal of Research on Computing in Education
Journal of Science Education and Technology (2)
Journal of Secondary Gifted Education
Journal of the Learning Sciences
Journal of Women and Minorities in Science and Engineering (4)
Learning and Leading with Technology
Learning Disabilities Research and Practice
Learning Disability Quarterly (2)
Mathematical Cognition (4)
Mathematics and Computer Education (2)
Mathematics Education Dialogues
Mathematics Education Research Journal (10)
Mathematics in School (3)
Mathematics Teacher (5)
Mathematics Teaching in the Middle School (5)
NASSP Bulletin (2)
Nurse Education Today
PAACE Journal of Lifelong Learning
Perspectives in Education and Deafness
Phi Delta Kappan (4)
Primary Science Review (2)
PRIMUS (9)
Research and Teaching in Developmental Education
Scandinavian Journal of Educational Research
School Leadership & Management
Science Education
Sociology of Education
T.H.E. Journal (2)
Teaching and Teacher Education (4)
Teaching Children Mathematics (9)
Teaching Mathematics and Its Applications (2)
Teaching Statistics

Research Papers and Monographs in Mathematics Education Produced in 1998

Hea-Jin Lee
The Ohio State University

This section lists 142 papers and monographs in mathematics education research that were produced in 1998 and included in the ERIC database by the end of August, 1999. Each entry is coded (see *Key to Codes*) with one to three major topic codes (in bold type) and any number of minor topic codes, as well as the grade level code (in parentheses). Studies related to preservice or inservice teacher education are indicated by the appropriate codes (Prsv, Insv). The level designated for teacher education or teacher studies indicates the grade level(s) at which the intern or teacher participants teaches, followed by the level code, "T" for teacher or "TE" for teacher education. All entries are indexed by major codes at the end of the volume (see page 105).

Adami-Bunyard, Eppy, Gummow, Mary, & Milazzo-Licklider, Nicole. (1998). *Improving primary student motivation and achievement in mathematics.* [SE061723]

This report describes a program for increasing student readiness for and achievement in mathematics. Analysis of probable cause indicated that student confidence, past success rate, and ability are deficient and impact student motivation.
Ach, Att, Lrnr (EL)

Austin, Suzanne S. (1998). *Transactional writing: Empowering women and girls to win at mathematics.* [ED415943]

Miami-Dade community colleges and middle schools participated in a three-year project designed to improve female students' mathematics skills and prepare them for technical jobs. Outcomes for college algebra included higher grades for the writing group, with females receiving higher pass rates than males.
Att, Writ, Gend, Ach (PS, MS)

Barton, Paul E., & Coley, Richard J. (1998). *Growth in school: Achievement gains from the fourth to the eighth grade. Policy Information Report.* Princeton, NJ: Policy Information Center, Educational Testing Service. [ED422331]

This study examined National Assessment of Educational Progress (NAEP) cohort records, and found that the average NAEP scores of students are slightly higher today than those of students of 20 or 25 years ago, but the same is not true of cohort growth between grades 4 and 8.
Ach, Revw, Lrng (K-12)

Bottle, Gill. (1998, September). *A study of children's mathematical experiences in the home.* Paper presented at the 8th Annual EECERA Conference, Santiago de Compostela, Spain. [ED424983]

This study assessed parental attitudes toward early mathematics and examined the ways in which families initiate and support the development of young children's early mathematical concepts.
Soc, Lrng, NSns (EC)

Bowman, Anita H., Bright, George W., & Vacc, Nancy N. (1998, April). *Teachers' beliefs across the first two years of implementation of Cognitively Guided Instruction.* Paper presented at the Annual Meeting of the American Educational Research Association, San Diego, CA. [ED419791]

This study examined changes in (n=20) elementary teachers' beliefs about teaching and learning during a 5-year implementation of cognitively guided instruction (CGI). Results indicated that during the first year, teacher's beliefs declined, despite receiving extensive support. It took two years of implementation for teachers' beliefs to recover to the same level evidenced immediately after the initial workshops.
TBlf, Insv, Tchg (EL, T)

Bridgeman, Brent, & Potenza, Maria. (1998, April). *Effects of an on-screen versus bring-your-own calculator policy on performance on the computerized SAT I: Reasoning test in mathematics.* Paper presented at the Annual Meeting of the National Council on Measurement in Education, San Diego, CA. [ED421527]

This study of the computerized SAT compared the performance of (n=360) students tested under the current policy (bring-your-own or on-screen calculator) with the performance of (n=373) students who had only an on-screen calculator available. No significant differences in performance were found, but students expresses a strong preference for using their own calculator.

Assm, Cltr, Att (HS)

Bright, George W. (Ed.). (1998). *Connecting learning across disciplines: Relationships between learning in mathematics and science and learning in other disciplines.* [SE061882]

This document contains chapters written by participants of a conference which focused on similarities and differences in learning and teaching in mathematics and science as compared to learning in other content areas.

Tchg, Lrng, Curr, Tech (All)

Bright, George W., Bowman, Anita, & Vacc, Nancy N. (1998, April). *Teachers' frameworks for understanding children's mathematical thinking.* Paper presented at the Annual Meeting of the American Educational Research Association, San Diego, CA. [SE061881]

This study examined how teachers' frameworks for human development, curriculum, and mathematics influenced how they interpreted children's mathematical thinking. The increasing importance of the developmental framework seems to be due to increased attention paid by teachers to the different kinds of solution strategies used by students.

TBlf, Lrnr, TKnw (T, EL)

Brinkworth, Peter, & Truran, John. (1998). *Research report of a study of the influences on students' reasons for studying or not studying mathematics.* [SE061928]

This study was conducted in response to the perceived problems of growing non-participation rates of students in mathematics courses, particularly at year 12 and beyond, and the decline in skill levels of students in science and mathematics who have been entering tertiary courses. The (n=393) students surveyed came from year 12 classes in 10 South Australian secondary schools.

Ach, Att, Lrnr, Curr (HS)

Byrne, Barbara M. (1998, April). *Testing for causal predominance between academic self-concept and academic achievement: A developmental perspective.* Paper presented at the Annual Meeting of the American Educational Research Association, San Diego, CA. [ED423271]

This study of (n=252) grade 3, (n=290) grade 7, and (n=335) grade 11 students attempted to establish causal direction between academic self-concept and academic achievement. For mathematics in grades 3 and 11, a clear flow of causality from achievement to self-concept was found.

Ach, Blf, Lrnr (K-12)

Camara, Wayne J. (1998, April). *Constraints and limitations in evaluating math curricular reform efforts: Pacesetter math case study.* Paper presented at the Annual Meeting of the American Educational Research Association, San Diego, CA. [ED419012]

This paper addresses the challenges and strategies of evaluating curricular reforms in secondary schools. Results of the study suggest that evaluation of curricular reform may be quite problematic, due to a lack of appropriate assessments, difficulties in assessing student growth, contextual factors, and the constraints in soliciting participation from teachers and schools.

Curr, Assm, Soc (HS)

Chang, Ching-Kuch. (1998). *Development of a course on instructional strategies for in-service science and mathematics teachers.* [SE061339]

This study was conducted to develop an investigation-based course on teaching strategies for inservice science and mathematics teachers. The purpose of this course was to learn how to teach science or mathematics from the constructivist perspective.

Insv, Tchg, PS, Plan (TE)

Cheek, Joyce M., & Smith, Lyle R. (1998). *Music training and mathematics achievement of ninth graders.* [ED425918]

Iowa Test of Basic Skills (ITBS) mathematics scores of (n=113) ninth graders who had received music lessons were compared according to whether the students were given private lessons. Students whose lessons involved the keyboard had significantly higher ITBS mathematics scores than did students whose lessons did not involve the keyboard.

Ach, Soc, IC (HS)

Chen, Jen-Jen, & Brenner, Mary E. (1998, April). *Mathematical word problem solving knowledge: Are second-grade students from Taiwan better than students from the United States?* Paper presented at the Annual Meeting of the American Educational Research Association, San Diego, CA. [SE061554]

This study compared word problem-solving abilities of second-grade students from Taiwan (n=24) with those of U. S. students (n=24). Children from Taiwan were better than their American counterparts in schematic knowledge only on word problems using addition number sentences with unknown results, not on semantic or procedural knowledge.

CC, PS, NSns, Arth (EL)

Cheng, Shiu-Shan, Chang, Wen-Hua, Chiang, Wu-Hsiung, & Guo, Chorng-Jee. (1998). *Development of a professional development program for science and mathematics teachers--An action research.* [SE061338]

This study was a three-year action research project to improve a summer professional development program for inservice secondary mathematics and science teachers in Taiwan. According to the results of this study, the program significantly changed participating teachers' beliefs toward learning and teaching, however, only a few of them put their belief into practice with success.

TBlf, Insv, Tchg (TE)

Chiu, Ming Ming. (1998). *Status effects in group problem solving: Group and individual level analyses.* [ED426079]

Ninth graders (n=80) who solved an algebra problem in groups of four showed status effects at the individual level. The results also show how criticism can have conflicting effects on social and cognitive goals.

Alg, Grpg, Soc, Styl, PS (HS)

Clay, Donald W. (1998). *A study to determine the effects of a non-traditional approach to algebra instruction on student achievement.* [SE062333]

The purpose of this study was to compare the achievement levels of two groups of eighth-grade Algebra I students: an experimental (Saxon text) method and a traditional method (Fair and Bragg text). The experimental group improved approximately 65% more than did the control group.

Alg, Curr, Ach (MS)

Clements, Douglas. (1998, February). *Young children and technology.* Paper presented at the Forum on Early Childhood Science, Mathematics, and Technology Education, Washington, DC. [ED416991]

This paper reviews the research on computers and social interaction, teaching with computers, and curriculum and computers. The review finds that computers serve as catalysts for social interaction, with children spending nine times as much time talking with peers while working at computers than while doing puzzles.

Tech, Revw, Styl, Soc (EC)

Cohen, David K., & Hill, Heather C. (1998). *Instructional policy and classroom performance: The mathematics reform in California. CPRE research report.* Philadelphia, PA: Consortium for Policy Research in Education, University of Pennsylvania. [SE061214]

The authors used data from a 1994 survey of California elementary school teachers and 1994 student California Learning Assessment System scores to examine the influence of assessment, curriculum, and professional development on teacher practice and student achievement.

Tchr, Curr, Ach, Assm (All, T)

Cohen, David K., & Hill, Heather C. (1998). *State policy and classroom performance: Mathematics reform in California.* Philadelphia, PA: Consortium for Policy Research in Education. [SE061256]

This document reports findings from a study to address the relations between policy and practice. Data used in this study was from a 1994 survey of California elementary school teachers to probe the classroom effects of state efforts to reform mathematics teaching and learning. A rudimentary model of the relationships between policy and practice is developed.

Curr, Tchg (T, EL)

Cohen, Susan B., & Hickman, Paul. (1998). *Statewide implementation program (SIP): Effective models for curriculum implementation.* [SE061395]

This paper discusses whether large-scale implementation of nationally funded standards-based science and mathematics instructional materials would hasten and strengthen the process of systemic reform for districts and the state. It concludes that implementation models will provide a more systemic framework to guide decisions of school systems and funders as they plan for success.

Curr, Matl, Insv (K-12)

Creech, Joseph D. (1998). *How do SREB states gauge student achievement?* Atlanta, GA: Southern Regional Education Board. [ED426505]

This report provides an analysis of academic achievement in Southern Regional Education Board (SREB) states. Findings show that more students in the southern U. S. are taking more challenging courses to prepare for college and careers. Steps that SREB states are taking to improve student achievement are discussed.

Ach, Assm, Curr (K-12)

Cudmore, Donald H., & English, Lyn D. (1998, April). *Using intranets to foster statistical problem posing and critiquing in secondary mathematics classrooms.* Paper presented at the Annual Meeting of the American Educational Research Association, San Diego, CA. [SE061532]

In this study, authors focused on investigating the use of Web-based Intranets to enable schools to conduct collaborative statistical investigations with students from other countries using the Internet. The central conclusion is that semi-private Web-based Intranets present an excellent medium for publishing, sharing, and discussing mathematics problems created by students.

Stat, Comp, Comm, Soc, PS (SE)

Davis, Holly S. (1998). *Effects of absence and cognitive skills index on various achievement indicators. A study of ISTEP scores, discrepancies, and school-based math and English tests of 1997-1998 seventh grade students at Sarah Scott middle school, Terre Haute, Indiana.* [ED423302]

This study examined the correlation between absence, cognitive skills index (CSI), and various achievement indicators such as the Indiana Statewide Testing for Educational Progress (ISTEP) test scores, discrepancies, and school-based English and mathematics tests for (n=64) seventh-grade students from one middle school. Findings include a significant positive correlation between CSI and achievement indicators (excluding discrepancies).

Ach, Assm, Lrnr (MS)

Din, Feng S. (1998). *Direct instruction in remedial math instructions.* [SE061262]

The study was designed to investigate whether direct instruction, applied as a main instructional strategy, with a focused curriculum, could help (n=19) students quickly improve their basic mathematics skills. The findings suggest that the integrated direct instruction approach, when used appropriately, can be both effective and efficient in helping students improve their basic mathematics skills.

Tchg, D/R (K-12)

Dossey, John A. (Ed.). (1998). *Confronting the core curriculum: Considering change in the undergraduate mathematics major.* Washington, DC: Mathematical Association of America. [SE061260]

This document presents proceedings of a National Science Foundation sponsored conference, held in April, 1994, to consider: the questions of core requirements for courses often employed by partner disciplines, what concepts and procedural skills are central, and how these questions might lead to the creation of a new undergraduate set of requirements that meet both the needs of mathematics departments and those of their partner disciplines.

Curr, DscM (PS)

Edgell, Larry J. (1998). *Computer assisted instruction versus classroom instruction.* [SE061909]

The purpose of this study, conducted in two fifth-grade classrooms during the school year 1996-1997, was to determine if computer assisted instruction does make a significant difference in test scores. The results of this study show that no significant difference exists between two groups.

Ach, CAI (EL)

Ellner, Johanna. (1998). *A study of student evaluations of the effectiveness of mathematics faculty holding different educational degrees.* [ED425765]

This study was conducted to determine whether the educational degree of mathematics instructors at New York City Technical College was a significant factor in students' perceptions of teacher effectiveness. The results show no significant difference between the effectiveness of instructors with doctorates and masters degrees.

Tchr, Blf (PS, T)

Everson, Howard T., & Dunham, Marlene D. (1998, April). *Effects of Equity 2000 on student achievement in mathematics: Evidence from school districts.* Paper presented at the Annual Meeting of the American Educational Research Association, San Diego, CA. [SE061521]

The authors discuss learning outcomes resulting from three national curricular reform efforts in mathematics. The presentation focuses on the College Board's Equity 2000 program, which operates on the principle that all students are given the opportunity to demonstrate high levels of academic achievement in mathematics.

Eqty, Curr, Ach (K-12)

Fan, Lianghuo, & Kaeley, Gurcharn S. (1998, April). *Textbooks use and teaching strategies: An empirical study.* Paper presented at the Annual Meeting of the American Educational Research Association, San Diego, CA. [ED419790]

This study investigated the influence of secondary school mathematics textbooks on teaching strategies. The study compared the teaching strategies of (n=14) teachers using University of Chicago School Mathematics Project textbooks in 13 schools with those of another (n=14) teachers using traditional textbooks in those schools.

Matl, Tchg (T)

Fan, Xitao, & Chen, Michael J. (1998). *Academic achievement of rural school students: A multi-year comparison with their peers in suburban and urban schools.* [ED418829]

This study examined the issue of whether any differences exist in school achievement among rural, suburban, and urban school students in four major areas of school learning: reading, mathematics, science, and social studies. The results showed that students from rural schools performed as well as, if not better than, their peers in metropolitan schools.

Ach, Soc (SE)

Ford, Barbara, & Klicka, Mary Ann. (1998). *The effectiveness of individualized computer assisted instruction in basic algebra and fundamentals of mathematics courses.* [SE062332]

An individualized computer assisted instruction mastery learning format was offered to sections of fundamentals of mathematics and basic algebra courses over four semesters. The effectiveness of the method compared to a traditional lecture approach was examined in the areas of passing the course, passing the final examination, course retention, and passing the next mathematics course.

CAI, Alg, Ach (PS)

Garrity, Cindy. (1998). *Does the use of hands-on learning, with manipulatives, improve the test scores of secondary education geometry students.* [SE061743]

A program for increasing adolescent visualization and understanding of geometry problems found that based on the presentation and analysis of the data on hands-on, cooperative learning, the students showed a more positive attitude toward mathematics and a desire to work with partners or in cooperative groups.

Manp, Geom, Grpg, Vis (SE)

Gelman, Susan A. (1998, February). *Concept development in preschool children.* Paper presented at the Forum on Early Childhood Science, Mathematics, and Technology Education, Washington, DC. [ED418776]

A review of recent psychological research on the cognitive process of concept development in preschool children found four key themes: concepts are tools with powerful implications for children's reasoning, children's early concepts are not necessarily concrete or perceptually based, children's concepts are not uniform across content areas, and children's concepts reflect their emerging theories about the world.

Styl, Revw, Mtcg (EC)

Grant, S. G. (1998, April). *Reforming reading, writing, and mathematics and the prospects for systemic reform.* Paper presented at the Annual Meeting of the American Educational Research Association, San Diego, CA. [ED422564]

This study explored systemic reform by examining how four Michigan elementary school teachers made sense of and responded to recent subject matter reforms. Findings suggest that understanding teachers' experiences can help educators see something of the nature of educational change at the classroom level as well as the promises and problems of efforts such as systemic reform.

Curr, TAtt, Tchg (EL, T)

Greenberg, Rebecca C. (1998, April). *Students' perceptions of self and classroom environment and* *their reported help seeking behaviors.* Paper presented at the Annual Meeting of the American Educational Research Association, San Diego, CA. [ED423221]

This study explored possible relationships between sixth-grade students' perceptions of themselves and their classroom environments and their help-seeking behaviors in mathematics classes. Results indicated that the frequency of asking the teacher for help was influenced by achievement, the presence of collaboration in the classroom, and a student's sense of autonomy and competence.

Att, Blf, Soc, Ach (MS)

Grobecker, Betsey. (1998). *Children's construction of the operation of addition.* [SE061784]

Six- to eight-year-old children (n=42) identified by their teachers as within the average range of ability in mathematics were individually tested on three different mathematics tasks. The results indicated that within each of the tasks there existed a sequential construction of increasingly complex cognitive abilities which was measured by providing the correct answers and the strategy types used.

A/S, Styl, Vis (EC)

Grobecker, Betsey. (1998, April). *The evolution of proportional structures in children with and without learning differences.* Paper presented at the Annual Meeting of the American Educational Research Association, San Diego, CA.. [ED421820]

In this study, children (aged 7-12) of average intelligence who had learning disabilities (n=29) and typical children (n=30) were individually tested. On applied problems test of the Woodcock-Johnson Tests of Achievement-Revised, the students with LD performed significantly below same-aged peers, although they achieved approximately at grade level on this task.

LD, Lrng, Ach, Lrnr, PS (EL)

Guo, Chorng-Jee (Ed.). (1998). *Proceedings of the National Science Council, Republic of China. Part D: Mathematics, science, and technology education, vol. 8, no. 1-2, January-May 1998.* Taipei, Taiwan: National Science Council. [SE061984]

This collection of research papers is published by the Editorial Board of the National Science Council of the Republic of China. The proceedings cover the domain and content areas of learning and learners; curriculum and materials; assessment and evaluation; history and philosophy of science; teacher preparation and professional development; and related areas of interest including environmental, special, health, medical, and information education.

Rsch, Curr, Ethn (All, TE)

Halpin, Regina. (1998). *Computer literacy taught through student-centered activities in elementary teacher education: Constructivist theory put into practice.* [ED419498]

During two semesters, pre- and post-questionnaires were administered to (n=73) preservice teachers completing integrated elementary methods courses in mathematics, science, social studies, and language arts. The results of this study provide valuable information for teacher education programs seeking ways to increase the probability that teachers will transfer computer skills into their classroom.

Comp, Prsv, IC, Tchg (TE, EL)

Hannula, Markku, (Ed.). (1998). *Current state of research on mathematical beliefs V. Proceedings of the MAVI-5 Workshop (August 22-25, 1997). Research Report 184.* Helsinki, Finland: Department of Teacher Education, P.O. Box 38 (Ratakatu 6A), FIN 00014, University of Helsinki. [ED418067]

This report includes all of the presentations from the fifth annual workshop on the Current State of Research on Mathematical Beliefs held in Helsinki, Finland, August 22-25, 1997.

Blf, Ethn, TBlf, Gend (All, T)

Haslam, M. B., Turnbull, Brenda J., & Humphrey, Daniel C. (1998). *Eisenhower Mathematics and Science Education Regional Consortia Program: Final evaluation report.* [SE061365]

This report analyzes the contributions that the 10 Eisenhower Regional Mathematics and Science Education Consortia have made to the nation's effort to reform mathematics and science education. Survey procedures, instruments, and program indicators are included in appendices.

Curr, Insv, Tech (All)

Haug, Carolyn. (1998, April). *Variability in teachers' responses to standards-based mathemat-*

ics reform. Paper presented at the Annual Meeting of the American Educational Research Association, San Diego, CA. [SE061878]

This study of how standards-based reform impacted teachers' curricular and instructional practices found great variability among teachers' perceptions of standards-based reform, and that this variability was reflected in their classroom practices. A few teachers understood standards-based reform to be complex, but usually their reform efforts were diminished by other pressing problems.

Curr, TBlf, Tchg (T, K-12)

Hawkins, Evelyn F., Stancavage, Frances B., & Dossey, John A. (1998). *School policies and practices affecting instruction in mathematics.* [SE061864]

This report is the second in a series that discusses results from the National Assessment of Educational Progress (NAEP). Information is provided on the status of mathematics education in 1996, and the changes that had taken place from the time of earlier NAEP assessments is chronicled.

Assm, Revw, Curr (K-12)

Heiney, Catherine J. (1998). *Effect of problem of the day on Ohio ninth grade proficiency test mathematics scores.* [SE061911]

In this study, an experimental group consisting of (n=19) students received a problem of the day treatment every day during the five-month period. Students in a control group (n=19) received no special treatment. No significant differences in Ohio ninth grade proficiency test scores were discovered for either group.

PS, Ach (HS)

Higbee, Jeanne L., & Dwinell, Patricia L. (Eds.). (1998). *Developmental education: Preparing successful college students. Monograph series #24.* Columbia, SC: National Resource Center for the First-Year Experience and Students in Transition, University of South Carolina. [ED423794]

The 16 chapters of this volume describe a wide variety of developmental programs to promote skill development and enhance academic performance for high-risk students at all levels of higher education.

Curr, Soc, Lrnr, D/R (PS)

High, Robert V. (1998). *The use of computer software in the teaching of college mathematics and statistics.* [SE061380]

This paper reports results of a survey instrument designed to measure the use of mathematics software packages, as well as statistical software packages in the college classroom. A majority of both statistics professors and mathematics professors indicated that they used and required the students to use calculators in the classroom.

Tech, Stat, TAtt, Matl, Cltr (T, PS)

Howie, Sarah, & Hughes, Colleen A. (1998). *Mathematics and science literacy of final-year school students in South Africa.* Pretoria, South Africa: Human Sciences Research Council. [SE061710]

This report provides detailed information about the Third International Mathematics and Science Study (TIMSS) and highlights the results related to mathematics and science literacy of final-year school students in South Africa. It also discusses the results of students who took the TIMSS in their final year of schooling in detail and the South African students' background.

Ethn, Ach, Lrnr (SE)

Hubbard, Donna. (1998). *Improving student knowledge of the graphing calculator's capabilities.* [SE061719]

This paper describes an intervention in two Algebra II classes in which the graphing calculator was incorporated into the curriculum as often as possible. The increase in understanding was evidenced by high homework, quiz, test, and alternative assessment scores.

GCal, Lrng, Alg (HS)

Huntley, Mary Ann. (1998, April). *Theoretical and empirical investigations of integrated mathematics and science education in the middle grades.* Paper presented at the Annual Meeting of the American Educational Research Association, San Diego, CA. [SE061564]

This study involved an examination of middle school integrated mathematics and science education from two perspectives--in theory and in practice.

IC, Tchg (MS)

Hyland, Nora E. (1998, April). *One high school teacher's unexamined pedagogy of race.* Paper presented at the Annual Meeting of the American

Educational Research Association, San Diego, CA. [ED421590]

A case study was conducted to examine the implicit beliefs and practices of one white high school mathematics teacher in the context of race. The study explored the subtle ways in which the dominant, hegemonic ideology and discourse saturates everyday life in schools.

TBlf, Eqty, Ethn (HS, T)

Jacob, Evelyn. (1998). *Anthropological perspectives for research in mathematics education: Beyond "cultural groups"*. [SE061758]

This document presents an overview of anthropological approaches to studying mathematics classrooms, programs, and innovations in schools. The document concludes with an explanation of how a concern with the education of cultural groups could be included in these major perspectives.

Rsch, Ethn, Curr (K-12)

Jewett, Frank. (1998). *Courseware for remedial mathematics: A case study in the benefits and costs of the mediated learning system in the California University.* [SE062266]

This report is one of a series from a project entitled Case Studies in Evaluating the Benefits and Costs of Mediated Instruction and Distributed Learning. It examines the benefits and costs of a mediated learning system courseware for remedial mathematics.

D/R, Tchg, Comp, Ach (PS)

Joftus, Scott, & Berman, Ilene. (1998). *Great expectations? Defining and assessing rigor in state standards for mathematics and English language arts.* Washington, DC: Council for Basic Education. [SE061116]

The Council for Basic Education's evaluation of the rigor of mathematics and language arts standards of 43 states found that: in mathematics, standards in 16 states were very rigorous, in 24 states were rigorous, and in 3 states had low levels of rigor; and mathematics standards tended to be more rigorous than language arts standards.

Curr, Assm, Rsch (K-12)

Johari, Abbas. (1998). *Effects of inductive multimedia programs including graphs on creation of linear function and variable conceptualization.* [ED423841]

This study examined the effects of an inductive multimedia program, including graphs, on (n=98) undergraduate students' ability to create linear functions and conceptualize variables from word problems. Results suggest the use of inductive multimedia program treatments that incorporate many strategies including inquiry learning from data, tutorial, schema, and core representational systems for the problem of translation, specifically creation of linear function.

MMed, Rep, Comp, PS (PS)

Johnson, Eugene G., & Siegendorf, Adriane. (1998). *Linking the National Assessment of Educational Progress (NAEP) and the Third International Mathematics and Science Study (TIMSS): Eighth-grade results.* Washington, DC: National Center for Education Statistics, Office of Educational Research and Improvement, U.S. Department of Education. [SE061691]

This is one of two reports about linking the NAEP results to TIMSS results for grade 8 mathematics and science. It describes the types of linking approaches considered, the method used to develop the linking functions, the sources of variability that affect the variance of the linking functions, and the validation and results obtained for grade 8 mathematics and science.

Assm, Ach (MS)

Kahle, Jane B., & Rogg, Steven R. (1998). *Bridging the gap: Equity in systemic reform. A Pocket Panorama of the landscape study, 1997.* Oxford, OH: OSI-Discovery, Miami University. [SE061405]

The purpose of this study was to identify barriers to science and mathematics education reform, particularly barriers (community and school resources, teaching practices, student attitudes) that may result in achievement differences among groups of students, as well as to improve the college education of all teachers of science and mathematics.

Curr, Eqty, Insv, Att (K-12, TE)

Kline, Kate, & Flowers, Judy. (1998, April). *A comparison of fourth graders' proportional reasoning in reform and traditional classrooms.* Paper presented at the Annual Meeting of the American Educational Research Association, San Diego, CA. [SE061558]

This study investigated the similarities and differences of (n=137) fourth graders' understanding of and reasoning about multiplication, division, and proportion tasks. Results provide evidence that students who are encouraged to use invented strategies for multiplication and division based on number relationships have a better understanding of the meaning of those operations.

M/D, PS, Arth, Tchg (EL)

Koebley, Sarah C., & Soled, Suzanne W. (1998, April). *The effects of a constructivist-oriented mathematics classroom on student and parent beliefs about and motivations towards being successful in mathematics.* Paper presented at the Annual Meeting of the American Educational Research Association, San Diego, CA. [SE061527]

The effects of a constructivist-oriented curriculum on the beliefs and motivations of students and parents toward being successful in mathematics were examined. The results indicated that project students were significantly more likely to orient themselves toward the task and internal schemes of reward rather than external motivators.

Lrnr, Blf, Soc, Styl (K-12)

Kong, Chit-Kwong, Hau, Kit-Tai, & Cheng, Zi-Juan. (1998, April). *Chinese students' self-concept and academic performance: Big-fish-little-pond effects and the role of perceived school status.* Paper presented at the Annual Meeting of the American Educational Research Association, San Diego, CA. [ED419213]

In this study, the Big-fish-little-pond effect and the effect of perceived school status on self-concept and academic achievement were examined. The results are explained and discussed using social-cultural factors and the frame of reference model.

Ach, Att, Soc, Ethn (MS)

Kraus, Lewis E. (1998, March). *Teaching mathematics to students with physical disabilities using the world wide web: The planemath program.* Paper presented at the California State University-Northridge Conference, Los Angeles, CA. [ED421815]

This paper describes a three-year project that has created on-line lessons and activities in mathematics and aeronautics aimed at improving the education and aeronautics-related career options for children with physical disabilities.

Lrnr, Matl, Tech (MS)

Lightner, Stanley L. (1998). *A comparison of the effectiveness of applied and traditional mathematics curriculum.* [SE062278]

This quasi-experimental study compared the acquisition of mathematics skills between General Mathematics students and Applied Mathematics 1 students. In this study, (n=151) subjects were tested in three rural Oklahoma comprehensive secondary schools.

Ach, Curr (SE)

Lubienski, Sarah Theule. (1998, April). *Problem solving as a means toward mathematics for all: A look through a class lens.* Paper presented at the Annual Meeting of the American Educational Research Association, San Diego, CA. [SE061853]

In this study, a researcher-teacher examined seventh-graders' experiences with a problem-centered curriculum and pedagogy. This article discusses equity-related challenges, as well as interventions that could be helpful to center mathematics instruction around problem solving.

Eqty, PS, Curr, Ethn (MS)

Luhm, Theresa, Foley, Ellen, & Corcoran, Tom. (1998). *The accountability system: Defining responsibility for student achievement. Children achieving: Philadelphia's education reform. Progress report series 1996-1997.* Philadelphia, PA: Consortium for Policy Research in Education, Graduate School of Education, University of Pennsylvania. [ED423342]

This report explores issues related to accountability in the context of Children Achieving, a school reform effort in Philadelphia, Pennsylvania. Data from the Children Achieving evaluation suggest that teachers felt that they had little time to prepare or respond to the new approach, although almost all were aware of the standards by the spring of 1997, and almost all saw them as potentially beneficial to students.

TBlf, Curr (EL, T)

Lunenburg, Fred C., & Irby, Beverly J. (1998). *Goals 2000 and integrated technology--A national status report: Preliminary results.* [ED425171]

This study used a cross-sectional survey design to determine the extent to which technology has been integrated in the schools with each of the eight National Education Goals as reported by elementary and secondary school principals from urban, suburban, and rural schools. Results suggest a discrepancy between principals' perceived use of technology as it relates to each of the National Education Goals.

Curr, Tech (K-12)

Mac Iver, Douglas J., Balfanz, Robert, & Plank, Stephen B. (1998). *The Talent Development Middle School. An elective replacement approach to providing extra help in math--The CATAMA Program (Computer- and Team-Assisted Mathematics Acceleration). Report No. 21.* [ED423326]

This report presents two studies of the CATAMA (Computer- and Team-Assisted Mathematics Acceleration) mathematics course. The discussion suggests that CATAMA has many advantages, compared to other approaches for providing extra help in mathematics, on several dimensions, including cost, capacity, and flexibility.

Lrnr, Curr, CAI, Ethn, Att (MS)

Martin, Daniel. (1998, April). *Student teachers' practices in primary school mathematics.* Paper presented at the Annual Meeting of the American Educational Research Association, San Diego, CA. [SE061559]

The purpose of this study was to understand the role of the mentor teacher, the classroom structure and processes, and also that of student-teacher's content knowledge in the development of their repertoire in the teaching of mathematics. Results imply that that subject-matter mentoring does not straightforwardly lead to better teaching.

Prsv, TKnw, Tchg, Comm (T, EL)

McClung, Lewis W. (1998). *A study on the use of manipulatives and their effect on student achievement in a high school Algebra I class.* [SE061897]

The purpose of this study was to evaluate the effects of the manipulative Algeblocks on student achievement in a high school Algebra I class. It was indicated that the students taught using the traditional method of lecture, homework, and in-class worksheets outperformed the students taught using the manipulatives.

Manp, Ach, Alg, Tchg (HS)

McFarland, Valere. (1998). *An investigation of the problem of identification in the under-representation of culturally diverse students in gifted and talented programs in Utah schools.* [ED425581]

This paper presents the findings of a study that investigated whether members of culturally diverse populations could be more adequately represented in elementary gifted and talented programs through the use of a non-traditional assessment method. The entire student population (n=199) was then assessed with a multiple intelligences assessment instrument.

Ethn, Eqty, Gift, Lrnr, Soc, Assm (EL)

McGatha, Maggie, Cobb, Paul, & McClain, Kay. (1998, April). *An analysis of students' statistical understandings.* Paper presented at the Annual Meeting of the American Educational Research Association, San Diego, CA. [ED423277]

The assessment task in this study was designed to provide information about 7th-grade students' current understanding and graphical representations of the mean. Results showed that students typically viewed the mean as a procedure that was to be used to summarize a group of numbers regardless of the task situation.

Stat, Lrng (MS)

McGinnis, J. Randy, Watanabe, Tad, & Kramer, Steve. (1998, April). *A longitudinal assessment of teacher candidates' attitudes and beliefs in a reform-based mathematics and science teacher preparation program.* Paper presented at the Annual Meeting of the American Educational Research Association, San Diego, CA. [SE061545]

This report describes the ongoing use of a valid and reliable instrument to measure teacher candidates' attitudes and beliefs for the Maryland Collaborative for Teacher Preparation (MCTP). Authors determined that the MCTP appeared to effect participating (n=104) teacher candidates' attitudes towards and beliefs about mathematics and science in the direction intended.

TAtt, TBlf, Prsv, Curr (TE)

McGinnis, J. Randy, Watanabe, Tad, Kramer, Steve, & Roth-McDuffie, Amy. (1998, April). *Charting the attitude and belief journeys of teacher candidates in a reform-based mathematics and science teacher preparation program.* Paper presented at the Annual Meeting of the American Educational Research Association, San Diego, CA. [SE061547]

This study describes the ongoing use of a valid and reliable instrument to measure teacher candidates' attitudes and beliefs that developed for the Maryland Collaborative for Teacher Preparation (MCTP). The document reports how MCTP teacher candidates' attitudes toward and beliefs about mathematics and science evolved over a two-year period.

TAtt, TBlf, Prsv, Curr (TE)

McLymont, Enid F., & da Costa, Jose L. (1998, April). *Cognitive coaching the vehicle for professional development and teacher collaboration.* Paper presented at the Annual Meeting of the American Educational Research Association, San Diego, CA. [ED420637]

This study explored alternative approaches to teaching and learning high school mathematics through a fluid approach to professional development utilizing cognitive coaching. Results indicated features necessary for success of the professional development effort: the principal's support, the coaching approach, reflective thinking, a comfortable atmosphere, a collaborative and nonjudgmental context, and teacher coaching in an atmosphere of trust.

Insv, Mtcg, Tchg, Soc (HS, TE)

Moldavan, Carla. (1998). *Fostering disposition toward mathematics.* [SE061566]

The author addressed students' affect toward mathematics in relation to the learning environment created by the teacher through the analysis of the mathematical autobiographies of students at four different institutions of higher education in the southeast U. S. The results revealed that the dedicated teachers who empowered students to reach their full potential have inspired others to become teachers.

Att, TAtt, Soc, Prsv (PS)

Moyer, Patricia S., & Jones, M. Gail. (1998). *Tools for cognition: Student free access to manipulative materials in control- versus autonomy-oriented middle grades teachers' classrooms.* [SE061563]

This study investigated middle grades students provided with free access to manipulative materials. It was found that when students are allowed some measure of control in the selection and use of manipulative materials, given the time to overcome their initial apprehension, they will spontaneously and selectively use these materials effectively as appropriate mathematical tools to mediate learning.

Manp, Matl, Lrnr (MS)

Narahara, May. (1998). *The effects of school entry age and gender on reading and math achievement scores of second grade students.* [ED421233]

This study examined the correlation between the chronological age of a child entering kindergarten and his or her performance on reading and mathematics achievement tests in second grade. Findings indicated a low or negligible correlation between kindergarten age entry and academic achievement.

Lrnr, Ach, Gend (EC)

National Assessment of Educational Progress. (1998). *1996 NAEP comparisons of average scores for participating jurisdictions. Findings from the 1996 mathematics grades 4 and 8 and science grade 8 assessments.* Washington, DC: Educational Testing Service. [ED418840]

This technical report from the National Association of Educational Progress 1996 State Assessment Program in Science and Mathematics provides comparisons of average mathematics scale scores for grade four and grade eight in public schools.

Ach, Assm (K-12)

National Center for Education Statistics. (1998). *Linking the National Assessment of Educational Progress (NAEP) and the Third International Mathematics and Science Study (TIMSS): A technical report.* Washington, DC: National Center for Education Statistics, Office of Educational Research and Improvement, U.S. Department of Education. [SE061829]

The purpose of this report is to describe the methods used to link the National Assessment of Educational Progress and the Third International Mathematics and Science Study.

Assm, Ach, Rsch (K-12)

National Center for Education Statistics. (1998). *Long-term trends in student mathematics performance.* [SE061863]

Data from the NAEP 1996 Long-Term Mathematics Assessment show a positive linear trend for three age groups since the first assessment in 1973, indicating improving scores over time. All subgroups, including African American and Hispanic students, showed positive linear trends as well, at all three age levels.

Assm, Ethn, Revw (K-12)

National Education Goals Panel. (1998). *Mathematics and science achievement in Colorado, 1998.* Washington, DC: Author. [SE061900]

This report summarizes progress each state has made toward Goal 3, the students' achievement and citizenship goal; and Goal 5, the mathematics and science goal with a specific emphasis on Colorado's mathematics and science achievements.

Ach (K-12)

National Education Goals Panel. (1998). *Mathematics and science achievement in Michigan, 1998.* Washington, DC: Author. [SE061903]

This report summarizes progress each state has made toward Goal 3, the students' achievement and citizenship goal; and Goal 5, the mathematics and science goal with a specific emphasis on Michigan's mathematics and science achievements.

Ach (K-12)

National Education Goals Panel. (1998). *Mathematics and science achievement in New Mexico, 1998.* Washington, DC: Author. [SE061899]

This report summarizes progress each state has made toward Goal 3, the students' achievement and citizenship goal; and Goal 5, the mathematics and science goal with a specific emphasis on New Mexico's mathematics and science achievements.

Ach (K-12)

National Education Goals Panel. (1998). *Mathematics and science achievement in North Carolina, 1998.* Washington, DC: Author. [SE061898]

This report summarizes progress each state has made toward Goal 3, the students' achievement and citizenship goal; and Goal 5, the mathematics and science goal with a specific emphasis on North Carolina's mathematics and science achievements.

Ach (K-12)

National Education Goals Panel. (1998). *Mathematics and science achievement in West Virginia, 1998.* Washington, DC: Author. [SE061901]

This report summarizes progress each state has made toward Goal 3, the students' achievement and citizenship goal; and Goal 5, the mathematics and science goal with a specific emphasis on West Virginia's mathematics and science achievements.

Ach (K-12)

National Education Goals Panel. (1998). *Mathematics and science achievement in Wisconsin, 1998.* Washington, DC: Author. [SE061902]

This report summarizes progress each state has made toward Goal 3, the students' achievement and citizenship goal; and Goal 5, the mathematics and science goal with a specific emphasis on Wisconsin's mathematics and science achievements.

Ach (K-12)

National Education Goals Panel. (1998). *Mathematics and science achievement state by state 1998.* Washington, DC: Author. [SE061827]

This report summarizes progress each state has made toward Goal 3, the students' achievement and citizenship goal; and Goal 5, the mathematics and science goal. It shows that the majority of states participating in National Assessment of Educational Progress (NAEP) assessments have made progress toward Goal 3 in mathematics.

Ach (K-12)

Norman, John, Stein, Mary, Moussiaux, Sandra, & Clay-Chambers, Juanita. (1998). *The effect of the Detroit Urban Systemic Initiative on perceived instructional practice and curriculum adequacy.* [SE061314]

A purpose of this case study was to obtain information about the influence of the Detroit Urban Systemic Initiative on the frequency of implementation of constructivist-oriented, standards based science and mathematics instructional practices. Findings indicate an increase in the use of standards-based teaching practices from 1996 to 1997.

Curr, Tchg (K-12)

Northwest Regional Educational Laboratory. (1998). *Depiction of science and mathematics education in the Northwest, 1998.* Portland, OR: Author. [SE061951]

This paper aims to assist educators and policymakers in examining regional trends in science and mathematics education. It presents recent data on key factors influencing mathematics and science education: population growth and diversity, student participation and achievement, and teacher characteristics and certification.

Ach, Tchr, Tchg (K-12, T)

Olivier, Alwyn, & Newstead, Karen (Eds.). (1998). *Proceedings of the 22nd Conference of the Inter-*

national Group for the Psychology of Mathematics Education, Stellenbosch, South Africa, July 12-17, 1998. Volume 1. [SE062271]

This document is the first volume of the proceedings of the 22nd conference of the International Group for the Psychology of Mathematics Education (PME) held on July 12-17, 1998, in South Africa.

Att, Tchg, Lrng, PS, Curr, Tech (All, TE)

Olivier, Alwyn, & Newstead, Karen (Eds.). (1998). *Proceedings of the 22nd Conference of the International Group for the Psychology of Mathematics Education, Stellenbosch, South Africa, July 12-17, 1998. Volume 2.* [SE062272]

This document is the second volume of the proceedings of the 22nd conference of the International Group for the Psychology of Mathematics Education (PME) held on July 12-17, 1998, in South Africa.

Att, Tchg, Lrng, PS, Curr, Tech (All, TE)

Olivier, Alwyn, & Newstead, Karen (Eds.). (1998). *Proceedings of the 22nd Conference of the International Group for the Psychology of Mathematics Education, Stellenbosch, South Africa, July 12-17, 1998. Volume 3.* [SE062273]

This document is the third volume of the proceedings of the 22nd conference of the International Group for the Psychology of Mathematics Education (PME) held on July 12-17, 1998, in South Africa.

Att, Tchg, Lrng, PS, Curr, Tech (All, TE)

Olivier, Alwyn, & Newstead, Karen (Eds.). (1998). *Proceedings of the 22nd Conference of the International Group for the Psychology of Mathematics Education, Stellenbosch, South Africa, July 12-17, 1998. Volume 4.* [SE062274]

This document is the fourth volume of the proceedings of the 22nd conference of the International Group for the Psychology of Mathematics Education (PME) held on July 12-17, 1998, in South Africa.

Att, Tchg, Lrng, PS, Curr, Tech (All, TE)

Owens, Douglas T. (Ed.). (1998). *Research in mathematics education 1996. An annotated listing of research in mathematics education published during 1996.* Columbus, OH: ERIC Clearinghouse for Science, Mathematics, and Environmental Education. [SE061848]

This annual listing of research in mathematics education contains annotated citations of research papers and monographs dated 1996 through March 1997 and abstracted for the ERIC database, as well as journal articles focusing on the interpretation and implications of mathematics education research.

Revw, Rsch, Curr, Tchg, Lrng (All, TE)

Owens, Douglas T., & Reed, Michelle K. (Eds.). (1998). *Research in mathematics education, 1997.* Columbus, OH: ERIC Clearinghouse for Science, Mathematics, and Environmental Education. [SE061965]

This annual listing of research in mathematics education contains annotated citations of research papers and monographs dated January 1997 through March 1998 and abstracted for the ERIC database, as well as journal articles focusing on the interpretation and implications of mathematics education research. Also included is an index of dissertations by institution and a list of journals searched.

Revw, Rsch, Curr, Lrng, Tchg (All, TE)

Ozgun-Koca, S. Asli. (1998). *Students' use of representations in mathematics education.* [SE061963]

This study examined students' attitudes towards multiple representations, what affects students' choice of representation to solve a mathematics problem, and how the computer setting affects students' choice of representations. It is suggested that multiple representations provide an environment for students to abstract and understand major mathematical concepts.

Rep, Tech, Att, Styl, Lrnr (PS)

Pape, Stephen J., & Tittle, Carol K. (1998, April). *Faculty case studies of revised mathematics courses within NYCETP: Process, findings, and unanticipated outcomes.* Paper presented at the Annual Meeting of the American Educational Research Association, San Diego, CA. [SE061790]

Faculty case studies of revised mathematics courses was reported to have served to strengthen one professor's commitment to the New York Collaborative for Excellence in Teacher Preparation (NYCETP) efforts and increased the potential for collaboration with members on other campuses.

Curr, Insv, Comm (TE)

Patrick, Carol, & Claxton, Amy. (1998, August). *Cognitive strategies in mental rotation and mathematical world problems.* Paper presented at the Annual Meeting of the American Psychological Association, San Francisco, CA. [SE062246]

In this study cognitive strategy was not found to play a role in the relation between mental rotation (complex spatial ability) and mathematical word problem performance.

PS, Styl, Gend (K-12)

Presmeg, Norma C. (1998). *A semiotic analysis of students' own cultural mathematics.* [ED425258]

This ongoing project investigated how mathematics educators can prepare prospective and practicing teachers to cope with cultural diversity. The semiotic framework developed is being applied to the work from the graduate course and to the high school project, which took place in the 1995-96 school year.

Ethn, Curr, Tchg (HS, PS, T)

Raman, Manya. (1998, April). *Epistemological messages conveyed by high school and college mathematics textbooks.* Paper presented at the Annual Meeting of the American Educational Research Association, San Diego, CA. [SE061562]

In this study of typical precalculus, calculus, and analysis texts and their treatment of the topic of continuity, it was found that these texts send conflicting messages about the purpose and use of mathematical definitions.

Matl, Calc (HS, PS)

Rasmussen, Chris L. (1998). *Reform in differential equations: A case study of students' understandings and difficulties.* [SE061520]

This study investigated six students' understanding of and difficulties with qualitative and numerical methods for analyzing differential equations. The author discusses the results from both individual perspectives and sociocultural perspectives.

AdvM, Tech, Lrng, ClIn (PS)

Reed, Michelle K., & Costner, Kelly M. (Eds.). (1998). *Proceedings of the Second Annual Spring Conference of the Mathematics, Science, and Technology Educators and Researchers of The Ohio State University, May 16, 1998, Columbus, OH.* [ED421353]

This document presents proceedings of the Second Annual Spring Conference for graduate students in mathematics, science, and technology education at The Ohio State University.

Tchg, Lrng, PS, Prsv, Eqty, Tech (All, TE)

Risacher, Billie F. (Ed.). (1998). *Scientists and mathematicians become school teachers.* Columbus, OH: ERIC Clearinghouse for Science, Mathematics, and Environmental Education. [ED417934]

This nontraditional teacher preparation program for mid-career and second-career teachers illustrates how the traditional familiar route to teacher certification can be expanded by facilitating the entry of scientists and mathematicians into teaching as a second career.

Prsv, Curr, Revw (TE)

Roark, Marvin B. (1998). *Different learning styles: Visual vs. non-visual learners mean raw scores in the vocabulary, comprehension, mathematical computation, and mathematical concepts.* [SE061600]

The study used (n=33) visual and (n=33) non-visual adult learners in the adult basic educational program at Putnamville Correctional Facility as the sample group. It was found that the visual learners group had higher mean scores than the non-visual learners group in mathematical computation and concepts, among other topics.

Styl, Vis, Lrnr (PS)

Ross, John A., Rolheiser, Carol, & Hoaboam-Gray, Anne. (1998, April). *Impact of self-evaluation training on mathematics achievement in a cooperative learning environment.* Paper presented at the Annual Meeting of the American Educational Research Association, San Diego, CA. [ED422381]

This study, which examined the effects of self-evaluation on (n=300) grade 5 and 6 students' performance in mathematics, demonstrated that self-evaluation training clarified student understanding of curriculum expectations. The findings also weaken the argument for the consequential validity of authentic assessment practices, at least with respect to student achievement.

Ach, Assm, Grpg, Prob (EL)

Sanders, Barbara J., Parkay, Forrest W., Shen, Jiliang, & Xin, Tao. (1998, April). *A cross-national comparison of fourth-grade mathematics instruction* *in the United States and China.* Paper presented at the Annual Meeting of the American Educational Research Association, San Diego, CA. [SE061540]

This study investigated the similarities and differences between Chinese and U. S. teachers in three areas: sense of personal efficacy in teaching mathematics, perceived ability to improve mathematics instruction, and perspective of the relationship between lesson preparation and delivery and students mathematical understanding.

TAtt, Tchg, CC (EL, T)

Schiel, Jeff. (1998). *Academic benefits in high school of an intensive summer program for academically talented seventh graders. ACT Research Report Series 98-4.* Iowa City, IA. [ED424262]

Seventh-grade students involved in Duke University's Summer Residential Program (SRP). Results show that SRP participation is positively related to academically talented students' subsequent academic performance in high school, over and beyond their ACT scores as seventh graders.

Gift, Ach, Curr, Lrnr (MS)

Schoen, Harold L., Hirsch, Christian R., & Ziebarth, Steven W. (1998, April). *An emerging profile of the mathematical achievement of students in the Core-Plus Mathematics Project.* Paper presented at the Annual Meeting of the American Educational Research Association, San Diego, CA. [SE061556]

This paper provides a brief overview of the Core-Plus Mathematics Project curriculum in terms of its design and theoretical framework and profile of the mathematical achievement outcomes of students who participated in the national field test of the curriculum.

Curr, Ach, Matl (HS)

Schoen, Harold L., & Pritchett, Johnette. (1998, April). *Students' perceptions and attitudes in a Standards-based high school mathematics curriculum.* Paper presented at the Annual Meeting of the American Educational Research Association, San Diego, CA. [SE061557]

This study analyzed students' perceptions and attitudes towards the Core Plus Mathematics Project (CPMP) curriculum by using the CPMP Student Belief survey. Results showed that CPMP students were significantly more positive about various aspects of the curriculum and of their classroom experience than students in traditional classes in the same school.

Curr, Blf, Tchg (HS)

Schullo, Stephen A., & Alperson, Burton L. (1998, April). *Low SES Algebra 1 students and their teachers: Individual and a bi-directional investigation of their relationship and implicit beliefs of ability with final grades.* Paper presented at the Annual Meeting of the American Educational Research Association, San Diego, CA. [ED424289]

This study examined mathematics achievement and the relationship of low socioeconomic status (SES) students with teachers. It was found that although there are social and economic explanations of failure of low SES students, ultimate success and failure may be significantly affected by differing personal beliefs about learning among students and teachers.

Blf, Soc, Ach, Alg (HS)

Seitsinger, Anne M., Barboza, Helen C., & Hird, Anne. (1998, April). *Single-sex mathematics instruction in an urban independent school.* Paper presented at the Annual Meeting of the American Educational Research Association, San Diego, CA. [SE061535]

An urban independent middle school grouped its (n=63) 6th and 7th graders into single-sex mathematics classes to improve girls' achievement in mathematics and attitudes toward mathematics with no negative impact on boys.

Ach, Att, Gend, Tchg (MS)

Shaughnessy, Catherine A., Nelson, Jennifer E., & Norris, Norma A. (1998). *NAEP 1996 mathematics cross-state data compendium for the grade 4 and grade 8 assessment. Findings from the state assessment in mathematics of the National Assessment of Educational Progress.* Washington, DC: National Library of Education, Office of Educational Research and Improvement, U.S. Dept. of Education. [ED417083]

This report includes revised results for the comparable assessments that are needed due to errors in the procedures that were originally used to develop the National Assessment of Educational Progress mathematics scale and achievement levels.

Ach, Assm, Impl (K-12)

Shepard, Lorrie, Taylor, Grace, & Betebenner, Damian. (1998). *Inclusion of Limited-English-Proficient students in Rhode Island's grade 4 mathematics performance assessment. CSE technical report 486.* Washington, DC: Office of Educational Research and Improvement. [ED427079]

The effect of testing accommodations, such as extra time, oral reading of the assessment, or small group testing, on the participation and performance levels of limited-English-proficient students (LEP) on the Rhode Island Grade 4 Mathematics Performance Assessment was studied. Accommodations consistently raised the relative position of LEP and special education students compared to their position on the MAT in the past.

Assm, Lang (EL)

Shimahara, Erika. (1998). *Homogeneous-ability grouping: Fourth-grade teachers' rationale and students' perceptions.* [ED424313]

This paper investigates practitioners' rationale for using tracking and explores the effects of tracking in the classroom and on students. The study consisted of observations of four fourth-grade classrooms, interviews with their four teachers, and surveys of 30 fourth-grade students in an elementary school in central Virginia. The results partially support the literature that suggests that teachers prefer tracking because it facilitates instruction.

Blf, TBlf, Grpg, TAtt, Tchg (EL, T)

Silver, Edward A. (1998). *Improving mathematics in middle school: Lessons from TIMSS and related research.* Washington, DC: Department of Education, Office of the Deputy Secretary. [SE061263]

This document reports the major findings from TIMMS and suggests a pervasive and intolerable mediocrity in mathematics teaching and learning in the middle grades and beyond.

Ach, Assm, CC, Tchg (SE)

Slack, Jill Berlin, & St. John, Edward P. (1998, April). *A model for measuring math achievement test performance: A longitudinal analysis of non-transient learners engaged in a restructuring effort.* Paper presented at the Annual Meeting of the American Educational Research Association, San Diego, CA. [ED421489]

This study investigated the mathematics achievement test performance of (n=62) nontransient elementary-school learners in accelerated schools using a longitudinal design. Findings were consistent with the Accelerated Schools philosophy that "disadvantaged students stand the most to gain from innovative teaching approaches.

Ach, Tchg, Soc (EL)

Slavit, David, & Dunn, Thea. (1998, April). *Exploring mathematics: Possibilities for learning in an alternative high school setting.* Paper presented at the Annual Meeting of the American Educational Research Association, San Diego, CA. [ED421505]

Qualitative methods were used to study the effect of engaging in a mathematics teaching experience in an alternative high school program, the Transcend program, on preservice teachers' beliefs; and the effect of a guided preservice teaching experience on at-risk learners' beliefs, self-concepts, and mathematical development.

Prsv, Att, TBlf, TAtt (HS, TE)

Snow-Renner, Ravay. (1998, April). *Mathematics assessment practices in Colorado classrooms: Implications about variations in capacity and students' opportunities to learn.* Paper presented at the Annual Meeting of the American Educational Research Association, San Diego, CA. [ED424293]

This study used data from the 1997 teacher survey to explore teacher reports about assessment practices in mathematics classrooms relative to student opportunities to learn. Findings indicate that students in different classrooms experience differential opportunities to learn relative to reform-oriented assessments, and that teachers indicate varying levels of capacity for implementing such assessment practices.

Assm, Curr, Lrng (K-12, T)

Sowder, Judith T., Philipp, Randolph A., Armstrong, Barbara E., & Schappelle, Bonnie P. (1998). *Middle-grade teachers' mathematical knowledge and its relationship to instruction.* Albany, NY: State University of New York Press. [SE061919]

This book presents research undertaken as a two-year investigation of two sets of related questions about teacher understanding concerning rational numbers, quantity, and proportional reasoning and how this knowledge affects teachers' awareness of how students learn.

TKnw, Tchg, NSns, RaPc (T, MS)

Spurling, Steven. (1998). *Progress and success of English, ESL and mathematics students at City College of San Francisco.* [ED425782]

This report summarizes three studies conducted during the 1997-98 school year. The studies investigated the level of academic success achieved by students at City College of San Francisco, and if this success varied by student background (i.e. ethnic group, age, gender), educational goal, and placement level.

Ach, Ethn, Gend, Soc (PS)

Stecher, Brian M., Barron, Sheila, Kaganoff, Tessa, & Goodwin, Joy. (1998). *The effects of standards-based assessment on classroom practices: Results of the 1996-97 RAND survey of Kentucky teachers of mathematics and writing.* [ED426070]

This report presents the results of a series of surveys of the impact of the Kentucky Instructional Results Information System on curriculum and instruction in mathematics in grades 5 and 8 and in writing in grades 4 and 7.

Curr, Tchg (MS, T)

Stein, Mary G. (1998). *Strategic learning: The implications of language in successful math problem-solving.* [ED416501]

This study explored the importance of language in successful mathematical problem solving. The participants of the study were (n=24) fourth-grade students in a public elementary school in an urban area. Students were instructed in solving mathematics word problems with a variety of strategies ranging from task-specific, procedural methods to teacher-directed explicit strategies.

Lang, PS, Tchg (EL)

Stevenson, Harold, Lee, Shin-Ying, & Nerison-Low, Roberta. (1998). *The educational system in Japan: Case study findings.* [ED418918]

This document summarizes the findings of a year-long study that used case studies of specific schools in Japan to collect qualitative data on the Japanese educational experience. Issues addressed were the effects of a unified curriculum, teacher work patterns, the role of schooling in social stratification, individual differences and concepts of ability, the role of the family, and foundations in preschool and elementary education.

Curr, Ethn, Lrnr, Assm (EL, T)

Stone, Lynda D., & Stone, James M. (1998, April). *Software design of computer games and collaborative processes of mathematical knowledge production.* Paper presented at the Annual Meeting of the American Educational Research Association, San Diego, CA. [ED418692]

This study explored the production of mathematical knowledge during computer-mediated learning activities by undergraduate students paired with elementary aged at-risk students. Results indicate that it is crucial for differences in problems to be systematically explored given that exploration of the mathematical patterns found in solution strategies provided children with opportunities to construct a deep understanding of principles underlying mathematics.

Grpg, PS, Comp, Styl (PS, EL)

Taber, Susan B. (1998). *Learning to teach math differently: The effect of "investigations" curriculum on teachers' attitudes and practices.* [SE061789]

This paper reports the results of a reform effort using curriculum materials as a vehicle for change. The professional development program, Insights and Investigations, incorporated four types of professional development experiences. According to the teacher-participants, the combination of utilizing Investigation curriculum units in the classroom did result in their learning to teach mathematics differently and more effectively.

Insv, Curr, Matl, TAtt (TE)

Takahira, Sayuri, Gonzales, Patrick, Frase, Mary, & Salganik, Laura Hersh. (1998). *Pursuing excellence: A study of U.S. twelfth-grade mathematics and science achievement in international context.* [SE061849]

This report compares the general mathematics and science knowledge of U. S. students in their last year of secondary school with those of 20 other countries as well as comparing achievement of U. S. students taking physics and advanced mathematics courses with those in 15 other countries.

CC, Ach, Knw, AdvM (SE)

Thurlow, Martha, Albus, Deb, Spicuzza, Richard, & Thompson, Sandy. (1998). *Participation and performance of students with disabilities: Minnesota's 1996 Basic Standards Tests in reading and math. State assessment series, Minnesota Report 16.* Minneapolis, MN: National Center on Education Outcomes, University of Minnesota. [ED425591]

This report discusses a study that examined the participation and performance of students with disabilities on the 1996 Minnesota Basic Standards Tests in reading and mathematics. Results indicated that approximately 70% of Minnesota's 8th grade students with disabilities participated in the Basic Standards Tests during the 1995-1996 school year, compared to participation rates of about 85% overall for students without disabilities.

Ach, LD, Assm (MS)

Uekawa, Kazuaki, & Lange, Rense. (1998). *An international perspective on eighth grade mathematics performance in rural, urban, and suburban schools: The United States vs. Korea.* [SE062330]

Eighth-grade mathematics scores of the Third International Mathematics and Science Study for the United States and Korea were studied as a function of school level variables and student level variables using Hierarchical Linear Modeling. The authors hypothesize that Korean culture plays an important role in preventing the urban decline, which has apparently affected urban education in the United States.

CC, Soc (MS)

Useem, Elizabeth. (1998). *Teachers' appraisals of talent development middle school training, materials, and student progress: Results from focus groups. Report no. 25.* [ED426171]

Middle school teachers (n=31) were asked to appraise the helpfulness of professional development training and materials in supporting their own teaching proficiency and the achievement level of their students, as well as obstacles they faced, their prediction of future use in the school, their evaluations of their students' capacity to meet the standards of the curriculum, and their sense of whether they make a difference.

TBlf, Matl, Insv, Ach, Curr (T, MS)

Vacc, Nancy Nesbitt, Bright, George W., & Bowman, Anita H. (1998, April). *Changing teacher's beliefs through professional development.* Paper presented at the Annual Meeting of the American Educational Research Association, San Diego, CA. [ED422296]

This study examined changes in (n=19) teachers' beliefs across the first two years of a professional development program in cognitively guided instruction (CGI). Participants changed their beliefs in three areas: teacher's view of children, teacher and student roles, and skill acquisition and problem solving.

TBlf, Insv, PS (EL, T)

Verna, Marilyn Ann, & Campbell, James Reed. (1998, April). *The differential effects of family processes and SES on academic self-concepts and achievement of gifted Asian American and gifted Caucasian high school students.* Paper presented at the Annual Meeting of the American Educational Research Association, San Diego, CA. [ED419025]

The focus of this study was to determine causal linkages among home environment, self-concepts, prior ability, and socioeconomic status on mathematics achievement and science achievement of gifted high school students (106 Asian and 107 Caucasian). Results showed that prior ability played a major role in influencing the child's educational achievement.

Soc, Gift, Ethn, Ach (HS)

Wagstaff, Mark, Melton, Jerry, Lawless, Brenda, & Combs, Linda. (1998). *African-American student achievement research project.* [ED425256]

This study investigated practices in school districts in the region in which African Americans were performing at high levels on Texas Assessment of Academic Skills reading, writing, and mathematics in the hope that these successful practices can be replicated to improve African American student achievement.

Ach, Ethn, Eqty, Curr (K-12)

Watt, Helen M. G. (1998, April). *Measuring attitudinal change in mathematics and English over the first year at high school: A multidimensional analysis.* Paper presented at the Annual Meeting of the American Educational Research Association, San Diego, CA. [ED421492]

Changes in student perceptions over the first year of high school form the basis of this study. Participants (n=365) were from three coeducational Government schools in metropolitan Sydney, Australia, and were of comparable socio-economic status.

Att, Ethn (MS)

Watt, Helen M. G. (1998, July). *The impact of the first year of high school on student self-, task-, and value-perceptions and judgments about significant others in mathematics and English.* Paper presented at the 15th Biennial Meeting of the International Society for the Study of Behavioral Development, Bern, Switzerland. [ED422450]

Changes in (n=365) student perceptions over the first year of high school and the interrelations of student and student-reported mother, father, and teacher perceptions form the basis of this study. Findings of declines in student perceptions across the seventh grade are discussed.

Soc, Att, Gend, Ach (MS)

Wenglinsky, Harold. (1998). *Does it compute? The relationship between educational technology and student achievement in mathematics.* Princeton, NJ: Policy Information Center. [ED425191]

Data from the 1996 National Assessment of Educational Progress in mathematics, consisting of fourth and eighth graders, were used to study the relationship between different uses of educational technology and various educational outcomes. The study found that the greatest inequities in computer use were not in how often they were used, but in the ways in which they were used.

Tech, Ach, Revw, Soc (K-12)

Wiest, Lynda R. (1998, April). *The role of fantasy and real-world problem contexts in fourth- and sixth-grade students' mathematical problem solving.* Paper presented at the Annual Meeting of the American Educational Research Association, San Diego, CA. [SE061852]

This study was an investigation of the influence of word-problem context (the nonmathematical, verbal aspect of a problem) on fourth- and sixth-grade students' preferences for and problem-solving performance on word problems. Girls and boys fared equally well, but students in a small town scored significantly lower than those from a small city.

PS, Lang, Lrnr, Gend, Lrnr, Soc (EL)

Williams-Miller, Janice E. (1998, April). *Student use of internal and external comparisons in determining efficacy for self-regulated learning.* Paper presented at the Annual Meeting of the American Educational Research Association, San Diego, CA. [ED420704]

This study explored ways in which (n=297) high school students obtained efficacy perceptions of self-regulated learning. Path analytic results suggested that these students depended primarily on external comparisons rather than on internal comparisons in determining their efficacy for self-regulated learning.

Styl, Blf, Lrng (HS)

Wilson, Jeni. (1998, June). *The nature of metacognition: What do primary school problem solvers do?* Paper presented at the National AREA Conference, Melbourne, Australia. [ED422315]

This paper discusses what metacognitive and cognitive actions elementary students make when they tackle mathematics problems. Students reported diverse metacognitive transitions and sequences when they tackled different types of problems.

Mtcg, Styl, Lrnr, PS (EL)

Wilson, Linda Dager, & Zhang, Liru. (1998, April). *A cognitive analysis of gender differences on constructed-response and multiple-choice assessments in mathematics.* Paper presented at the Annual Meeting of the American Educational Research Association, San Diego, CA. [ED420721]

The intent of this study was to see whether item types make a difference in gender results. Results of testing (n=29,809) students suggest that, while the gap is narrowing on traditional multiple choice tests, it is still present on more complex items that require students to construct their own responses and communicate their thinking.

Gend, PS, Assm, Lrnr (K-12)

Wittman, Timothy K., Marcinkiewicz, Henry R., & Hamodey-Douglas, Stacie. (1998). *Computer assisted automatization of multiplication facts reduces mathematics anxiety in elementary school children.* [ED423869]

Fourth-grade elementary school children exhibiting high and low mathematics anxiety were trained on multiplication facts using the Math

Builder Program, a computer program designed to bring their performance to the automaticity level. Results support the position that mathematics anxiety may result from a failure to learn or inadequate preparation in the mastery of fundamental skills.

Anx, M/D, Comp, Curr (EL)

Wong, Regina M., Lawson, Michael J., & Keeves, John. (1998). *Self-explanation and mathematics problem solving: The effects of self-explanation on students' problem-solving in high school mathematics.* [SE061568]

The performance of a group of Grade 9 mathematics students trained to use a self-explanation procedure during the study was compared with that of students who used their typical study procedures. Use of the self-explanation method had an indirect effect on performance, this effect being mediated by associated knowledge access and knowledge generation activity.

Blf, PS, Tchg, Knw (HS)

Yoon, Bokhee, & Resnick, Lauren B. (1998). *Instructional validity, opportunity to learn and equity: New standards examinations for the California Mathematics Renaissance.* [ED426071]

Student (n=1,936) and teacher (n=105) responses to the opportunity to learn questionnaires and student performance were compared between Renaissance (classes of 43 teachers) and comparison groups. Results show that Renaissance teachers had more opportunities to participate in reform-oriented professional development activities than teachers in a multi-state comparison group and that Renaissance classroom practice reflected these teacher learning opportunities.

TBlf, Insv, PS, Soc, Ach (SE)

Young, Deidra J. (1998, April). *Characteristics of effective rural schools: A longitudinal study of Western Australian rural high school students.* Paper presented at the Annual Meeting of the American Educational Research Association, San Diego, CA. [ED422151]

Data from a longitudinal study of school effectiveness in Western Australia on school environment, classroom learning environment, student background variables, teacher and student self-concept, teacher morale, and science and mathematics achievement were collected twice for (n=849) students. Most of the variation in science and mathematics achievement was explained by student-level variables, particularly socioeconomic status, gender, aboriginality, English-speaking background, and academic self-concept.

Ach, Soc, Att, Ethn (HS)

Index

Every dissertation, thesis, journal article, paper, and monograph listed in the preceding three sections is indexed by one to three **Major** and any number of *Minor* topic codes. The 75 major codes have been clustered into 20 groups of related topics for the purpose of indexing. Only the **Major** codes are listed after each entry in the index.

Achievement (Ach)

Dissertations and theses

Arvidson	Ach, TAtt, Curr
Baker	Ach, Att, Curr
Basta	Att, Aff, Ach
Belmarez	LD, Tchg, Ach
Brown	Ach, PS, Mscn
Brown	Ach, Assm, Soc
Brown	Ach, Soc
Brown	Ach, D/R
Buck	Ach, Gift
Callan	Assm, Ach, Styl
Carroll	Alg, Tchg, Ach
Castillo	GCal, Ach, Att
Cleaveland	Alg, Tchg, Ach
Daves	Ach, Soc, Curr
Devaney	Assm, Ach
Dickinson	Ach, Ethn, Soc
Diel	Ach, Anx, Blf
Dilullo	Revw, Anx, Ach
Dlamini	Ach, Anx, Aff
Doyle	LD, Ach, Tchg
Early	Assm, Ach, Tchg
Elder	Assm, Ach, Alg
Ellerman	Cltr, Ach, Att
Finch	CAI, Ach
Garcia	Ach, Alg
Garza-Perez	Att, Ach
Gentile	TBlf, Ach
Ginsburg-Block	PS, Ach, Att
Godfrey	Gend, Att, Ach
Gradone	Soc, Ach
Hall	LD, Ach
Hall	Ach, Aff
Hardaway	Curr, Ach
Harijati	Ach, Ethn
Hunter	Curr, Ach
Jasper	Att, Blf, Ach
Johnson	Ach, LD, Lrng
Jones	Assm, Ach
Joshi	Ethn, Ach
Kamalvand	Ach, Aff, Ethn
King	Cltr, Comp, Ach
Lang	Ethn, Ach
Langston	Att, Ach
Lawrence	Ach
Leslie	Curr, Ach
Liou-Mark	Ethn, CC, Ach
Maine	Assm, Ach, Att
March	Ach, Lrnr
Marolla	Gend, Ach
Maxey	Ach, CAI, Comm
Mehana	Ach, Soc, Revw
Morris	Curr, Ach
Mosley-Jenkins	Curr, Ach, Alg
Moyana	Soc, Tchr, Ach
Mukulalwendo	D/R, Gend, Ach
Nute	Tchg, Manp, Ach
Pirie	Assm, Ach
Pysher	Alg, Mtcg, Ach
Robinson	Ach, Assm, D/R
Roddick	Lrng, Ach, Calc
Ross	TBlf, Ach, Soc
Seagraves	Cltr, Ach, Soc
Singletary	Ach, Gend, Grpg
Sloan	Curr, Ach
Smith	Ach, Plan, Curr
Stanton	Grpg, Tchg, Ach
Starnes	Ach, Lrnr, Tchg
Thomas	Ethn, Ach, Att
Trimboli	Ach, Assm, Lrnr
Vanhorn	Grpg, Ach
Wardlaw	Tchg, CAI, Ach
Wear	Gend, Ach, Att
Zuiker	Ach, Att, Tchr

Articles

Baxter	Ach, Calc, Curr
Boelkins	Ach, Att
Bracey	Ach
Campbell	Curr, Ach
English	NSns, PS, Ach
Forgione	Ach, Assm
Holmes	Soc, CC, Ach
Hutton	Ach
Jones	CC, Ach, Curr
Kantowski	Ach, Curr, Revw
Kim	Ethn, Ach, Blf
Linchevski	Grpg, Ach
Lupart	Ach, Gend, Gift
Luxton	Ach, Tchg
Manning	Ach, Gend
McBee	Assm, Ach
McConaghy	Ach
McKnight	Assm, Ach
McLure	Ach, Gend
Park	Gend, Ethn, Ach
Pong	Ach, Soc
Riley	Ach, Curr, Revw
Rodgers	Ach, D/R
Smith	Ach, Soc, Ethn
Waldron	LD, Ach

Papers

Adami-Bunyard	Ach, Att, Lrnr
Barton	Ach, Revw
Brinkworth	Ach, Att, Lrnr
Byrne	Ach, Blf
Cheek	Ach, Soc, IC
Clay	Alg, Curr, Ach
Cohen	Tchr, Curr, Ach
Creech	Ach, Assm
Davis	Ach, Assm
Edgell	Ach, CAI
Everson	Eqty, Curr, Ach
Fan	Ach, Soc
Grobecker	LD, Lrng, Ach
Heiney	PS, Ach
Howie	Ethn, Ach, Lrnr
Johnson	Assm, Ach
Kong	Ach, Att, Soc
Lightner	Ach, Curr
McClung	Manp, Ach, Alg
Narahara	Lrnr, Ach
National	Ach, Assm
National	Ach
National	Assm, Ach
Northwest	Ach, Tchr
Ross	Ach, Assm, Grpg
Schiel	Gift, Ach, Curr
Schoen	Curr, Ach, Matl

Schullo	Blf, Soc, Ach
Seitsinger	Ach, Att, Gend
Shaughnessy	Ach, Assm, Impl
Silver	Ach, Assm, CC
Slack	Ach, Tchg, Soc
Spurling	Ach, Ethn, Gend
Takahira	CC, Ach, Knw
Thurlow	Ach, LD
Wagstaff	Ach, Ethn
Wenglinsky	Tech, Ach, Revw
Young	Ach, Soc, Att

Affect (Aff); Anxiety (student's) (Anx); Attitudes (student's) (Att); Beliefs (student's) (Blf)

Dissertations and theses

Allen	Aff, PS
Baker	Ach, Att, Curr
Basta	Att, Aff, Ach
Brown	Att, Calc, Rep
Bryant	Calc, Grpg, Att
Cassity	Vis, Aff, GCal
Castillo	GCal, Ach, Att
Clark	Att, Alg, Curr
Coates	Anx, Att, Soc
Diel	Ach, Anx, Blf
Diel	Ach, Anx, Blf
Dilullo	Revw, Anx, Ach
Dlamini	Ach, Anx, Aff
Dube	Att, Lrnr, Ethn
Ehlers	Att, Blf, Ethn
Ellerman	Cltr, Ach, Att
Franquiz	Ethn, Curr, Att
Fuller	Gend, Att
Garza-Perez	Att, Ach
Ginsburg-Block	PS, Ach, Att
Godfrey	Gend, Att, Ach
Grant McLoughlin	PS, Tchg, Blf
Hall	Ach, Aff
Hall	Aff
Hylton-Lindsay	Aff, GCal, Mtcg
Jasper	Att, Blf, Ach
Jensen	Gend, Att, Soc
Johnson	Meas, Aff, Comp
Jones	GCal, Rep, Att
Kamalvand	Ach, Aff, Ethn
Kelly-Begin	Phil, Blf, Tchg
Khalid	Ethn, Aff, Soc
Langston	Att, Ach
Leonard	Att, Curr, IC
Maine	Assm, Ach, Att
Maree	Att, Anx, Ethn
McIntyre	Att, Anx, Assm
McIntyre	Att, Anx, Assm
Nimmons	Vis, Att, Gend
Norman	Gend, Anx
Nowosad	Blf, Lrng
Otomo	Tech, Anx, Gend
Parker	Anx, Soc
Picard	Aff, Lrng
Quinlan	Gend, Aff
Randolph	Anx
Richardson	D/R, Att
Schroeder	D/R, Anx, Tchg
Swor	Gend, Aff
Thomas	Ethn, Ach, Att
Wear	Gend, Ach, Att
Wilson-Relyea	Gend, Blf
Zuiker	Ach, Att, Tchr

Articles

Adams	Calc, Att
Balli	Soc, Blf
Boelkins	Ach, Att
Ehnebuske	Soc, Aff
Kim	Ethn, Ach, Blf
McClendon	Blf, Ethn
Mulhern	Att, Assm
Newstead	Anx, Tchg
Norton	Gend, Aff
Owens	Lrng, Att
Ponza	Att, IC, Ethn
Ruffell	TAtt, Att
Stipek	Curr, Aff, Frac
Watanabe	Arth, Anx, Soc
Wolters	Aff, Gend, Styl

Papers

Adami-Bunyard	Ach, Att, Lrnr
Austin	Att, Writ, Gend
Brinkworth	Ach, Att, Lrnr
Byrne	Ach, Blf
Ellner	Tchr, Blf
Greenberg	Att, Blf, Soc
Hannula	Blf, Ethn, TBlf
Koebley	Lrnr, Blf
Kong	Ach, Att, Soc
Moldavan	Att, TAtt, Soc
Olivier	Att, Tchg, Lrng
Ozgun-Koca	Rep, Tech, Att
Schoen	Curr, Blf
Schullo	Blf, Soc, Ach
Seitsinger	Ach, Att, Gend
Shimahara	Blf, TBlf, Grpg
Slavit	Prsv, Att, TBlf
Watt	Att, Ethn
Watt	Soc, Att
Williams-Miller	Styl, Blf
Wittman	Anx, M/D, Comp
Wong	Blf, PS
Young	Ach, Soc, Att

Algebra, pre-algebra (Alg); Calculus, precalculus (Calc); Post Calculus (AdvM)

Dissertations and theses

Alexander	Calc, Curr
Atkins	Writ, Rep, Calc
Bosche	Calc, GCal, Curr
Brown	Att, Calc, Rep
Bryant	Calc, Grpg, Att
Carroll	Alg, Tchg, Ach
Cheong	Alg, Curr
Clark	Att, Alg, Curr
Cleaveland	Alg, Tchg, Ach
Crawford	Calc, Writ, Mtcg
Durant	Insv, Calc, Tchg
Edwards	AdvM, Prf, PS
Elder	Assm, Ach, Alg
Eyles	Calc, Tchg
Fox	Calc, Curr, TBlf
Garcia	Ach, Alg
Garner	Calc, Curr
George	PS, Calc, Rep
Hackett	Calc, Writ
Hardin	Calc, GCal, CAI
Hassani	Calc, Knw
Hollstein	Curr, Alg
Howald	TKnw, Alg
Johari	MMed, Alg, PS
Kalchman	Alg, Curr
Kersaint	Prsv, Alg
Lindboe	Lrng, Tchg, Alg
Maccini	Alg, LD, Tchg
Martelly	Manp, D/R, Alg
Mcfadden	Alg, PS
Mosley-Jenkins	Curr, Ach, Alg
O'Connor	Calc, IC
Penalva Martinez	NSns, AdvM
Porter	Calc, Writ
Pruet	Curr, Alg
Pyke	Lrng, Alg
Pysher	Alg, Mtcg, Ach
Rafael	Calc, Revw, Lrng
Rasmussen	Curr, Lrng, AdvM
Roddick	Lrng, Ach, Calc

Sobol	Manp, Clln, Alg
Sproule	Alg, PS
Sydney	Writ, Alg
Tai	Calc, Gend, Curr
Teague	CC, Calc
Thorpe	Lrng, Tchg, Alg
Tinklepaugh Biegler	Alg, Tchg, Mscn
Windsor	GCal, Calc, Tchg
Zandieh	Calc, Lrng

Articles

Adams	Calc, Att
Anderson	Calc, Mscn
Baxter	Ach, Calc, Curr
Bethell	Alg, GCal
Bezuidenhout	Mscn, Calc
Bolte	Calc, Writ
Bosse	Grpg, Calc
De Bock	Alg, Mscn
Even	Rep, Alg
Hitt	Rep, Alg
Janvier	Rep, Alg
Juhler	Alg, Assm
Kahn	AdvM, Tchg
Keller	Rep, Calc
Lloyd	TBlf, Tchg, Alg
MacGregor	Rep, Styl, Alg
Meira	Patt, Rep, Alg
Moschkovich	Alg, Knw
Murphy	Calc, Gend, Ethn
Nemirovsky	Comp, Alg, GCal
O'Callaghan	Alg, CAI
Oppong	Comp, Alg, Lrng
Pillay	Alg, Knw'
Rettig	Alg, Soc
Sastre	Alg, Est
Slavit	GCal, Calc, Gend
Tirosh	Alg, TAtt, Tchg
Williams	Lrng, Assm, Alg
Zbiek	TKnw, Alg, Comp

Papers

Chiu	Alg, Grpg, Soc
Clay	Alg, Curr, Ach
Ford	CAI, Alg
Hubbard	GCal, Lrng, Alg
McClung	Manp, Ach, Alg
Raman	Matl, Calc
Rasmussen	AdvM, Tech, Lrng

Anxiety (teacher's) (TAnx); Attitudes (teacher's) (TAtt); Beliefs (teacher's) (TBlf); Content knowledge, pedagogical knowledge (teacher's) (TKnw); Teachers (characteristics of) (Tchr)

Dissertations and theses

Arvidson	Ach, TAtt, Curr
Arvold	Prsv, Tchr, Lrng
Blanton	Prsv, TKnw, Lrng
Blaszczynski	D/R, Tchr
Bremer	Geom, Tknw, Tatt
Brewer	Lrng, TBlf
Brill	TKnw, Tech
Britton	Tblf, Prsv
Brombacher	Curr, TBlf
Bryan	Prsv, TKnw, TBlf
Bryan	Prsv, TKnw, TBlf
Campbell	TBlf, Insv
Carson	Tchg, TAtt, TBlf
Clarke	Ethn, TKnw, Tchg
Contreras Francia	TKnw, Rep, Tchg
Desmond	Geom, TKnw
Egger Moellwald	Insv, TAtt, TBlf
Everage	Insv, Tchr, Tchg
Fernandez	TBlf, TKnw, Tchg
Fine	Tchr, TAtt
Fox	Calc, Curr, TBlf
Gentile	TBlf, Ach
Gilreath	Tchg, TBlf
Gober	TBlf, Gend, Eqty
Golley	IC, TBlf, Rep
Gregorio	Stat, TKnw
Haller	Insv, Prob, TKnw
Haver	Curr, Tatt
Howald	TKnw, Alg
Jones	Curr, Tchg, TBlf
Lowery	Prsv, TKnw
Martin	Prsv, Tchg, TKnw
McDougall	CAI, TAtt, Geom
McNeill	Insv, Tatt
Merriweather	Cltr, GCal, TAtt
Milou	GCal, Tatt
Mitchell	Tchr, Tatt
Moyana	Soc, Tchr, Ach
Myers	GCal, TBlf, TKnw
Myers	GCal, TBlf, TKnw
Noel	TBlf, TAtt, TKnw
Reardon-Lazo	Tchg, TKnw
Rees-Krebs	Tchg, TBlf
Rockenbach	TAtt, TBlf, Manp
Ross	TBlf, Ach, Soc
Silver	Writ, TAtt
St Clair	Writ, Oral, Tblf
Swenson	TKnw, Prob
Thomas	TBlf, Comp, Prsv
Wang	TBlf, Tchg, Curr
Wheatley	TBlf, Curr
White	Tchr, Insv, Tchg
Wick	TKnw, Rep, Mscn
Wilkerson	Insv, TKnw, Assm
Zeek	TBlf, Tchg, PS
Zuiker	Ach, Att, Tchr

Articles

Atkins	Tech, TAtt
Barnett	TKnw, Tchg
Camacho	TBlf, TAtt
Cooney	Prsv, TBlf
Franke	TKnw, Tchg
Lehmann	Tchg, TKnw
Lloyd	TBlf, Tchg, Alg
Ludlow	TAtt, Assm, Rep
Philippou	TAtt
Quinn	Manp, Tchg, TKnw
Ruffell	TAtt, Att
Stein	Tchg, TKnw, Curr
Tirosh	Alg, TAtt, Tchg
Wenstrom	Prsv, TKnw
Whitenack	Tech, TKnw, Lrng
Wohlhuter	TBlf, Insv, Tchg
Zazkis	NSns, TKnw
Zbiek	TKnw, Alg, Comp

Papers

Bowman	TBlf, Insv
Bright	TBlf, Lrnr, TKnw
Cheng	TBlf, Insv, Tchg
Cohen	Tchr, Curr, Ach
Ellner	Tchr, Blf
Grant	Curr, TAtt
Hannula	Blf, Ethn, TBlf
Haug	Curr, TBlf
High	Tech, Stat, TAtt
Hyland	TBlf, Eqty, Ethn
Luhm	TBlf, Curr
Martin	Prsv, TKnw, Tchg
McGinnis	TAtt, TBlf, Prsv
Moldavan	Att, TAtt, Soc
Northwest	Ach, Tchr
Sanders	TAtt, Tchg
Shimahara	Blf, TBlf, Grpg

Slavit	Prsv, Att, TBlf
Sowder	TKnw, Tchg
Useem	TBlf, Matl, Insv
Vacc	TBlf, Insv
Yoon	TBlf, Insv, PS

Arithmetic (Arth); Addition, subtraction (A/S); Decimals (Decm); Equivalence, proportion (Eqv); Estimation (Est); Fractions, rational numbers (Frac); Integers (Int); Multiplication, division (M/D); Number sense (NSns); Place Value (PlcV); Ratio, proportion, percent (RaPc); Whole numbers (Whol)

Dissertations and theses

Alexander	Frac, Meas
Ambrose	A/S, PS, Lrng
Anderson	RaPc, Grpg, CAI
Bond	Frac, RaPc
Danine	Assm, D/R, A/S
Drueck	A/S, LD, D/R
Goodrow	Lrng, Curr, NSns
Hecht	Arth, Frac
Hecht	Arth, Frac
Kanemoto	Manp, PlcV
Koellner	Frac, NSns, RaPc
Lei	CC, Arth
Lightner	D/R, Est, Arth
Orton-Flynn	LD, NSns
Penalva Martinez	NSns, AdvM
Rusch	PlcV, Prsv, Lrng
Spies	CAI, Tchg, M/D
Szanto	Arth, LD, Mscn
Tauzer	NSns, LD, Lrnr
Yaw	NSns, Curr

Articles

Abramovich	CAI, NSns, Patt
Anghileri	M/D, CC
Battista	NSns, Tchg
Behr	Frac, Manp
Bennett	M/D, D/R, LD
Braten	Phil, A/S, Lrng
Carpenter	NSns, Styl, Arth
Cawley	LD, Arth
English	NSns, PS, Ach
Forrester	Tchg, Meas, Est
Foster	NSns, Arth
Gal	D/R, NSns
Giroux	Rep, Arth, Lrng
Kamii	NSns, Lrng
Klein	Curr, A/S
Kota	PS, Lrng, Arth
Koyama	Rep, Frac, Grpg
LeFevre	CC, M/D
Morin	LD, M/D
Mulligan	Lrng, M/D
Mwangi	PS, Arth
Pauli	Arth, Tchg
Pepper	NSns, Lrng, Styl
Peters	NSns, Lrng
Reys	Assm, NSns
Reys	Arth, Curr
Reys	NSns, Est
Saenz-Ludlow	Arth, Lrng, Tchg
Sastre	Alg, Est
Schliemann	Styl, M/D
Stacey	Frac, Styl
Steffe	Lrng, M/D
Stipek	Curr, Aff, Frac
Wade	Lang, Nsns, Soc
Warrington	Frac, M/D, Tchg
Watanabe	Arth, Anx, Soc
Wiegel	NSns, Grpg, Lrng
Zazkis	NSns, TKnw

Papers

Grobecker	A/S, Styl
Kline	M/D, PS
Wittman	Anx, M/D, Comp

Assessment, evaluation (Assm)

Dissertations and theses

Autrey	D/R, Assm
Brown	Ach, Assm, Soc
Burton	Assm
Callan	Assm, Ach, Styl
Cheng	D/R, Assm, Matl
Cowan	Assm, Ethn
Danine	Assm, D/R, A/S
Devaney	Assm, Ach
Draznin	Assm, Writ
Early	Assm, Ach, Tchg
Elder	Assm, Ach, Alg
Fan	Curr, Assm
Fritz	Assm
Graham	Assm, D/R, Mscn
Gray	Assm, Soc
Hartl	D/R, Assm
Hauge	Curr, Assm
Jones	Assm, Ach
Kett	Assm, Rsch, Curr
Maine	Assm, Ach, Att
Mari Molla	Assm, D/R
McIntyre	Att, Anx, Assm
Odett	Assm, Gend, Ethn
Pirie	Assm, Ach
Poehl	Geom, Assm
Powell	Assm, Curr, Soc
Preast	Assm, D/R
Robinson	Ach, Assm, D/R
Tamassia	Assm, Gend, Ethn
Trimboli	Ach, Assm, Lrnr
Wilkerson	Insv, TKnw, Assm

Articles

Berry	Assm, Rep
Cooper	Assm, Rsch
Coppe	Writ, Assm
Ensign	Assm, Soc
Fisher	ClIn, Assm
Fitzpatrick	Assm
Forgione	Ach, Assm
Juhler	Alg, Assm
Long	Assm
Ludlow	TAtt, Assm, Rep
McBee	Assm, Ach
McKnight	Assm, Ach
Millett	Assm, Curr
Mulhern	Att, Assm
Odafe	Assm, Grpg
Olszewski-Kubilius	Gift, Assm, Gend
Reys	Assm, NSns
Rogers	Assm, Gift, Styl
Wiliam	Assm
Williams	Lrng, Assm, Alg

Papers

Bridgeman	Assm, Cltr
Camara	Curr, Assm
Creech	Ach, Assm
Davis	Ach, Assm
Hawkins	Assm, Revw
Joftus	Curr, Assm, Rsch
Johnson	Assm, Ach
National	Assm, Ach
National	Assm, Ethn
Ross	Ach, Assm, Grpg
Shaughnessy	Ach, Assm, Impl
Shepard	Assm, Lang

Silver	Ach, Assm, CC
Snow-Renner	Assm, Curr
Wilson	Gend, PS, Assm

Calculators (Calc); Computer-assisted instruction (CAI); Computers (general) (Comp); Graphing calculators (GCal); Microcomputer, microcalculator based labs (M/Cbl); Multimedia (MMed); Technology (general) (Tech)

Dissertations and theses

Anderson	RaPc, Grpg, CAI
Baab	Vis, Stat, CAI
Bell	Geom, Tchg, Tech
Bellamy	Curr, Tchg, Tech
Bonnette	Geom, CAI, Vis
Bosche	Calc, GCal, Curr
Bowen	GCal, Matl
Bragg	CAI, Stat
Brill	TKnw, Tech
Burton	D/R, PS, Tech
Cassity	Vis, Aff, GCal
Castillo	GCal, Ach, Att
Chadwick	CAI, Revw
Cole	Tech, MMed
Cole	Tech, MMed
Crowe	Tech
Duarte	Comp, Tchg
Ellerman	Cltr, Ach, Att
Facemyer	Tech, Comp
Ferguson	Tech, Curr
Finch	CAI, Ach
Fischer	Tech, Curr
Fox	GCal, D/R
Hardin	Calc, GCal, CAI
Hazelbaker	CAI, Prsv, Grpg
Hollaway	CAI
Hylton-Lindsay	Aff, GCal, Mtcg
Johari	MMed, Alg, PS
Johns	CAI, LD
Johnson	Meas, Aff, Comp
Jones	GCal, Rep, Att
King	Cltr, Comp, Ach
King	CAI, Revw
Luebeck	Tech, Comm, Insv
Maldonado	Comp, GCal
Maxey	Ach, CAI, Comm
McDougall	CAI, TAtt, Geom
Melczarek	PS, CAI, Geom
Merriweather	Cltr, GCal, TAtt
Milou	GCal, Tatt
Myers	GCal, TBlf, TKnw
Otomo	Tech, Anx, Gend
Portela	Comm, Tech
Priebe	Grpg, Tchg, Comp
Rock	PS, Tech, Writ
Round	GCal, Geom, Tchg
Seagraves	Cltr, Ach, Soc
Sedighian	MMed, Comp, Curr
Sefair Nader	MMed, Prob, Stat
Spies	CAI, Tchg, M/D
Thomas	Phil, Tech
Thomas	TBlf, Comp, Prsv
Van Gorp	CAI, Prsv
Waker	CAI
Wardlaw	Tchg, CAI, Ach
Warner	Comp, Ethn, Soc
Wayand	Tech, Comm, Tchg
Wilcox	Tech, CAI
Windsor	GCal, Calc, Tchg

Articles

Abramovich	PS, Comp, Rep
Abramovich	CAI, NSns, Patt
Atkins	Tech, TAtt
Bethell	Alg, GCal
Day	Comp, Curr
Dickey	Tech, Revw
Dugdale	Comp, Gend, PS
Dugdale	Comp, PS
Edwards	Rep, Comp
Elias	CAI, D/R
Embse	Geom, GCal, Vis
Falk	Gend, Comp
Gerber	Comp
Greenberg	Curr, Comp
Hambleton	Tchg, MMed
Harskamp	GCal, Tchg
Haruta	GCal, M/CBL, Grpg
Hudson	Comm, Grpg, MMed
Khoo	CAI, Vis
Koehler	Curr, Comp, Lrng
Lesser	Stat, Tech
McGrath	Comp, Curr
Nemirovsky	Comp, Alg, GCal
O'Callaghan	Alg, CAI
Oppong	Comp, Alg, Lrng
Pitcher	CAI, Matl
Quinn	Tech, Prsv
Slavit	GCal, Calc, Gend
Whitenack	Tech, TKnw, Lrng
Zbiek	TKnw, Alg, Comp

Papers

Bridgeman	Assm, Cltr
Clements	Tech, Revw, Styl
Cudmore	Stat, Comp, Comm
Edgell	Ach, CAI
Ford	CAI, Alg
Halpin	Comp, Prsv, IC
High	Tech, Stat, TAtt
Hubbard	GCal, Lrng, Alg
Jewett	D/R, Tchg, Comp
Johari	MMed, Rep, Comp
Kraus	Lrnr, Matl, Tech
Lunenburg	Curr, Tech
Mac Iver	Lrnr, Curr, CAI
Ozgun-Koca	Rep, Tech, Att
Rasmussen	AdvM, Tech, Lrng
Stone	Grpg, PS, Comp
Wenglinsky	Tech, Ach, Revw
Wittman	Anx, M/D, Comp

Grouping for instruction, cooperative learning (Grpg); Planning, decision making (Plan); Teaching (role, style, methods) (Tchg)

Dissertations and theses

Anderson	RaPc, Grpg, CAI
Bell	Geom, Tchg, Tech
Bellamy	Curr, Tchg, Tech
Belmarez	LD, Tchg, Ach
Bryant	Calc, Grpg, Att
Bunt	IC, Plan
Carroll	Alg, Tchg, Ach
Carson	Tchg, TAtt, TBlf
Chronaki	Vis, Comm, Tchg
Clarke	Ethn, TKnw, Tchg
Cleaveland	Alg, Tchg, Ach
Contreras Francia	TKnw, Rep, Tchg
Dawkins	CC, Tchg
Dias	Lrng, Eqty, Tchg
Doyle	LD, Ach, Tchg
Duarte	Comp, Tchg
Durant	Insv, Calc, Tchg
Early	Assm, Ach, Tchg
Everage	Insv, Tchr, Tchg
Eyles	Calc, Tchg
Fernandez	TBlf, TKnw, Tchg
Fong	Lrng, Tchg
Gilreath	Tchg, TBlf
Grant McLoughlin	PS, Tchg, Blf

Hazelbaker	CAI, Prsv, Grpg
Hernandez	PS, Mtcg, Grpg
Hughes	Prsv, Curr, Tchg
Itterly	Lrng, Tchg, Curr
Jones	Curr, Tchg, TBlf
Kelly-Begin	Phil, Blf, Tchg
King	Curr, Tchg, ClIn
Lindboe	Lrng, Tchg, Alg
Maccini	Alg, LD, Tchg
Manheimer	Curr, Tchg
Martin	Prsv, Tchg, TKnw
Mason	Grpg, Lrng
Mitchell	Writ, Tchg
Mwangi	Tchg, PS
Nelson	Curr, Ethn, Tchg
Nolly	Ethn, Soc, Tchg
Nute	Tchg, Manp, Ach
Priebe	Grpg, Tchg, Comp
Rabb-Liu	Tchg, Lrng
Reardon-Lazo	Tchg, TKnw
Rees-Krebs	Tchg, TBlf
Roth McDuffie	Curr, Insv, Tchg
Round	GCal, Geom, Tchg
Rucker	Grpg, Tchg
Schaffner	Tchg, Lrng, Stat
Schroeder	D/R, Anx, Tchg
Shockey	Curr, Tchg
Singletary	Ach, Gend, Grpg
Smith	D/R, Rsch, Tchg
Smith	Ach, Plan, Curr
Spies	CAI, Tchg, M/D
Stanton	Grpg, Tchg, Ach
Starnes	Ach, Lrnr, Tchg
Swanger	Mscn, Tchg, LD
Thornton	Manp, Tchg
Thorpe	Lrng, Tchg, Alg
Tinklepaugh	Alg, Tchg, Mscn
Vanhorn	Grpg, Ach
Vasquez	Tchg, Lrnr
Wang	TBlf, Tchg, Curr
Wardlaw	Tchg, CAI, Ach
Wayand	Tech, Comm, Tchg
White	Tchr, Insv, Tchg
Windsor	GCal, Calc, Tchg
Woods	Gend, Grpg, Writ
Zeek	TBlf, Tchg, PS

Articles

Barnett	TKnw, Tchg
Barton	Lang, Tchg
Battista	NSns, Tchg
Baxter	D/R, Tchg
Boaler	Styl, Tchg
Bosse	Grpg, Calc
Castro	Prob, Tchg
Dekker	PS, Grpg
DeLong	Tchg, Grpg
Forrester	Tchg, Meas, Est
Franke	TKnw, Tchg
Frykholm	Comm, Tchg, Prsv
Hadfield	Tchg
Hambleton	Tchg, MMed
Harskamp	GCal, Tchg
Haruta	GCal, M/CBL, Grpg
Hudson	Comm, Grpg, MMed
Kahn	AdvM, Tchg
Kinney	Insv, Tchg
Koyama	Rep, Frac, Grpg
Lehmann	Tchg, TKnw
Linchevski	Grpg, Ach
Lloyd	TBlf, Tchg, Alg
Luxton	Ach, Tchg
Maher	Grpg, Curr
Newstead	Anx, Tchg
Nunes	Tchg, LD, Lrnr
Odafe	Assm, Grpg
Ostad	LD, D/R, Tchg
Pauli	Arth, Tchg
Peressini	Tchg, Comm
Quinn	Manp, Tchg, TKnw
Saenz-Ludlow	Arth, Lrng, Tchg
Setati	Lang, Tchg
Smith	Tchg
Stein	Tchg, TKnw, Curr
Tanner	Oral, Tchg
Tirosh	Alg, TAtt, Tchg
Warrington	Frac, M/D, Tchg
Wiegel	NSns, Grpg, Lrng
Wohlhuter	TBlf, Insv, Tchg

Papers

Bright	Tchg, Lrng
Chang	Insv, Tchg
Cheng	TBlf, Insv, Tchg
Chiu	Alg, Grpg, Soc
Cohen	Curr, Tchg
Din	Tchg, D/R
Fan	Matl, Tchg
Garrity	Manp, Geom, Grpg
Huntley	IC, Tchg
Jewett	D/R, Tchg, Comp
Martin	Prsv, TKnw, Tchg
McLymont	Insv, Mtcg, Tchg
Norman	Curr, Tchg
Olivier	Att, Tchg, Lrng
Reed	Tchg, Lrng, PS
Ross	Ach, Assm, Grpg
Sanders	TAtt, Tchg
Shimahara	Blf, TBlf, Grpg
Slack	Ach, Tchg, Soc
Sowder	TKnw, Tchg
Stecher	Curr, Tchg
Stein	Lang, PS, Tchg
Stone	Grpg, PS, Comp

Classroom interaction (ClIn); Communications (Comm); Oral communication, classroom discourse (Oral); Writing, journals (Writ)

Dissertations and theses

Abu Diab	Writ, Ethn, Lang
Atkins	Writ, Rep, Calc
Chronaki	Vis, Comm, Tchg
Crawford	Calc, Writ, Mtcg
Crespo	Prsv, Writ
Draznin	Assm, Writ
Graham	Comm, PS
Hackett	Calc, Writ
King	Curr, Tchg, ClIn
Langston	Comm, Writ, Lrng
Leonard	ClIn, Comm
Luebeck	Tech, Comm, Insv
Maxey	Ach, CAI, Comm
Mitchell	Writ, Tchg
Moskal	Comm, Rep, Patt
Portela	Comm, Tech
Porter	Calc, Writ
Retzer	Mtcg, Oral, Writ
Rock	PS, Tech, Writ
Silver	Writ, TAtt
Sobol	Manp, ClIn, Alg
Song	Writ, Curr, Patt
St Clair	Writ, Oral, Tblf
Sydney	Writ, Alg
Troy	Writ, Prsv
Vick	Lang, IC, Comm
Wayand	Tech, Comm, Tchg
Williams	Writ, PS
Woods	Gend, Grpg, Writ

Articles

Bolte	Calc, Writ
Borasi	Lang, Writ
Broughton	Comm, ClIn
Coppe	Writ, Assm
Fisher	ClIn, Assm

Frykholm	Comm, Tchg, Prsv
Hudson	Comm, Grpg, MMed
Peressini	Tchg, Comm
Shield	Writ
Siegel	Writ, Lang
Steele	Comm, Geom
Tanner	Oral, Tchg

Papers

Austin	Att, Writ, Gend
Cudmore	Stat, Comp, Comm
Pape	Curr, Insv, Comm

Cross-cultural (CC); Equity (Eqty); Ethnic, racial (Ethn); Social factors, context, parents (Soc)

Dissertations and theses

Abu Diab	Writ, Ethn, Lang
Atkinson	Curr, Ethn, Lrng
Bateman	CC, Styl, Ethn
Brown	Ach, Assm, Soc
Brown	Ach, Soc
Chen	CC, PS, Knw
Clarke	Ethn, TKnw, Tchg
Coates	Anx, Att, Soc
Coates	Curr, Soc
Cowan	Assm, Ethn
Daves	Ach, Soc, Curr
Dawkins	CC, Tchg
Dias	Lrng, Eqty, Tchg
Dickinson	Ach, Ethn, Soc
Dube	Att, Lrnr, Ethn
Ehlers	Att, Blf, Ethn
Figgers	Soc, Ethn
Franquiz	Ethn, Curr, Att
Friel	PS, Ethn
Gober	TBlf, Gend, Eqty
Gradone	Soc, Ach
Gray	Assm, Soc
Harijati	Ach, Ethn
Jensen	Gend, Att, Soc
Joshi	Ethn, Ach
Kamalvand	Ach, Aff, Ethn
Khalid	Ethn, Aff, Soc
Lang	Ethn, Ach
Leggett	Ethn, D/R, Impl
Lei	CC, Arth
Lim	PS, Soc, Ethn
Liou-Mark	Ethn, CC, Ach
Maree	Att, Anx, Ethn
Martin	Ethn, Eqty, Soc
Mehana	Ach, Soc, Revw
Millette-Mcguire	Soc, Ethn
Molepo	Ethn, Soc
Moyana	Soc, Tchr, Ach
Nelson	Curr, Ethn, Tchg
Nolly	Ethn, Soc, Tchg
Odett	Assm, Gend, Ethn
Parker	Anx, Soc
Pettitt	Gend, Soc
Powell	Assm, Curr, Soc
Roberts	Curr, Phil, Soc
Ross	TBlf, Ach, Soc
Schillinger	Ethn, Gend
Seagraves	Cltr, Ach, Soc
Smith-Jones	Curr, Soc
Snipes	Ethn, Curr
Tamassia	Assm, Gend, Ethn
Teague	CC, Calc
Thomas	Ethn, Ach, Att
Tolley	Ethn, Soc
Warner	Comp, Ethn, Soc

Articles

Anghileri	M/D, CC
Atweh	Soc, Lang, Gend
Balli	Soc, Blf
Bell	CC, Lang
Bielen	Lang, Soc
Brenner	Curr, Soc
Cai	CC, PS
Carey	Soc
Ehnebuske	Soc, Aff
Ensign	Assm, Soc
Holmes	Soc, CC, Ach
Jones	CC, Ach, Curr
Kahle	Curr, Eqty
Kim	Ethn, Ach, Blf
Kordaki	Meas, Lrng, Soc
LeFevre	CC, M/D
Malloy	Soc, PS, Styl
McClendon	Blf, Ethn
Murphy	Calc, Gend, Ethn
Park	Gend, Ethn, Ach
Pereira-Mendoza	CC, Stat
Peressini	Soc
Pong	Ach, Soc
Ponza	Att, IC, Ethn
Raymond	Gend, Eqty
Rettig	Alg, Soc
Shama	Styl, Ethn
Shaver	Soc, Gend
Smith	Ach, Soc, Ethn
Wade	Lang, Nsns, Soc
Watanabe	Arth, Anx, Soc
Young	Curr, Eqty

Papers

Bottle	Soc, Lrng
Cheek	Ach, Soc, IC
Chen	CC, PS
Chiu	Alg, Grpg, Soc
Everson	Eqty, Curr, Ach
Fan	Ach, Soc
Greenberg	Att, Blf, Soc
Guo	Rsch, Curr, Ethn
Hannula	Blf, Ethn, TBlf
Higbee	Curr, Soc, Lrnr
Howie	Ethn, Ach, Lrnr
Hyland	TBlf, Eqty, Ethn
Jacob	Rsch, Ethn
Kahle	Curr, Eqty
Kong	Ach, Att, Soc
Lubienski	Eqty, PS, Curr
McFarland	Ethn, Eqty, Gift
Moldavan	Att, TAtt, Soc
National	Assm, Ethn
Presmeg	Ethn, Curr
Schullo	Blf, Soc, Ach
Silver	Ach, Assm, CC
Slack	Ach, Tchg, Soc
Spurling	Ach, Ethn, Gend
Stevenson	Curr, Ethn, Lrnr
Takahira	CC, Ach, Knw
Uekawa	CC, Soc
Verna	Soc, Gift, Ethn
Wagstaff	Ach, Ethn
Watt	Soc, Att
Watt	Att, Ethn
Young	Ach, Soc, Att

Curriculum, programs (Curr); Diagnosis, remedial mathematics (D/R); Integrated curriculum (IC); Manipulatives (Manp); Materials (texts, other resources) (Matl)

Dissertations and theses

Alexander	Calc, Curr
Arvidson	Ach, TAtt, Curr
Atkinson	Curr, Ethn, Lrng
Autrey	D/R, Assm
Baker	Ach, Att, Curr
Batzer	D/R

Bellamy	Curr, Tchg, Tech
Blaine	Curr, Patt
Blaszczynski	D/R, Tchr
Bosche	Calc, GCal, Curr
Bowen	GCal, Matl
Brombacher	Curr, TBlf
Brown	Ach, D/R
Bunt	IC, Plan
Burton	D/R, PS, Tech
Calhoun	Curr
Cheng	D/R, Assm, Matl
Cheong	Alg, Curr
Clark	Att, Alg, Curr
Coates	Curr, Soc
Cook	D/R, Styl, Gend
Danine	Assm, D/R, A/S
Daves	Ach, Soc, Curr
Drueck	A/S, LD, D/R
Fan	Curr, Assm
Ferguson	Tech, Curr
Fischer	Tech, Curr
Fischer	Matl, Curr
Fox	GCal, D/R
Fox	Calc, Curr, TBlf
Franquiz	Ethn, Curr, Att
Gaddis	Curr
Garner	Calc, Curr
Golley	IC, TBlf, Rep
Goodrow	Lrng, Curr, NSns
Graham	Assm, D/R, Mscn
Hardaway	Curr, Ach
Harrington	Matl, Lrng
Harris	IC
Hartl	D/R, Assm
Hauge	Curr, Assm
Haver	Curr, Tatt
Heavey	IC
Hollstein	Curr, Alg
Houghton	D/R, Curr
Hughes	Prsv, Curr, Tchg
Hunter	Curr, Ach
Huhtley	IC, Curr
Itterly	Lrng, Tchg, Curr
Jackson	D/R, Knw
Jones	Curr, Tchg, TBlf
Kalchman	Alg, Curr
Kanemoto	Manp, PlcV
Keiser	Geom, Mscn, Curr
Kett	Assm, Rsch, Curr
King	Curr, Tchg, ClIn
Leggett	Ethn, D/R, Impl
Leonard	Att, Curr, IC
Leslie	Curr, Ach
Lightner	D/R, Est, Arth
Manheimer	Curr, Tchg
Mari Molla	Assm, D/R
Martelly	Manp, D/R, Alg
Morris	Curr, Ach
Mosley-Jenkins	Curr, Ach, Alg
Mukulalwendo	D/R, Gend, Ach
Nelson	Curr, Ethn, Tchg
Norko	Matl, Patt
Nute	Tchg, Manp, Ach
O'Connor	Calc, IC
Powell	Assm, Curr, Soc
Preast	Assm, D/R
Preston	Rep, Curr, Insv
Prichard	Lrng, D/R, Mscn
Pruet	Curr, Alg
Rasmussen	Curr, Lrng, AdvM
Richardson	D/R, Att
Roberts	Curr, Phil, Soc
Robinson	Ach, Assm, D/R
Rockenbach	TAtt, TBlf, Manp
Roth McDuffie	Curr, Insv, Tchg
Schroeder	D/R, Anx, Tchg
Sedighian	MMed, Comp, Curr
Shockey	Curr, Tchg
Sloan	Curr, Ach
Smith	Ach, Plan, Curr
Smith	Curr, Rep
Smith	D/R, Rsch, Tchg
Smith-Jones	Curr, Soc
Snipes	Ethn, Curr
Sobol	Manp, ClIn, Alg
Song	Writ, Curr, Patt
Tai	Calc, Gend, Curr
Tarr	Curr, Lrng, Prob
Thornton	Manp, Tchg
Vick	Lang, IC, Comm
Wang	TBlf, Tchg, Curr
Wheatley	TBlf, Curr
White	D/R, LD, Revw
Yaw	NSns, Curr

Articles

Allen	Curr, LD
Baxter	Ach, Calc, Curr
Baxter	D/R, Tchg
Behr	Frac, Manp
Bennett	M/D, D/R, LD
Boulter	Meas, IC
Brenner	Curr, Soc
Campbell	Curr, Ach
Day	Comp, Curr
Elias	CAI, D/R
Fuchs	Curr, LD
Gal	D/R, NSns
Galagedera	Stat, D/R
Geiger	D/R, Styl
Greenberg	Curr, Comp
Johnson	Curr
Jones	CC, Ach, Curr
Kahle	Curr, Eqty
Kantowski	Ach, Curr, Revw
Klein	Curr, A/S
Koehler	Curr, Comp, Lrng
Maher	Grpg, Curr
McGrath	Comp, Curr
Miglietti	D/R, Lrnr
Millett	Assm, Curr
Ostad	LD, D/R, Tchg
Pitcher	CAI, Matl
Ponza	Att, IC, Ethn
Quinn	Manp, Tchg, TKnw
Reys	Arth, Curr
Riley	Ach, Curr, Revw
Rodgers	Ach, D/R
Ross	IC
Selter	Curr
Spence	IC, Meas
Stein	Tchg, TKnw, Curr
Stipek	Curr, Aff, Frac
Tirosh	IC, Lrng
Underhill	Rsch, D/R
Wertheimer	Phil, Curr
Young	Curr, Eqty

Papers

Camara	Curr, Assm
Cheek	Ach, Soc, IC
Clay	Alg, Curr, Ach
Cohen	Curr, Tchg
Cohen	Tchr, Curr, Ach
Cohen	Curr, Matl
Din	Tchg, D/R
Dossey	Curr
Everson	Eqty, Curr, Ach
Fan	Matl, Tchg
Garrity	Manp, Geom, Grpg
Grant	Curr, TAtt
Guo	Rsch, Curr, Ethn
Halpin	Comp, Prsv, IC
Haslam	Curr, Insv
Haug	Curr, TBlf
Higbee	Curr, Soc, Lrnr
Huntley	IC, Tchg
Jewett	D/R, Tchg, Comp
Joftus	Curr, Assm, Rsch
Kahle	Curr, Eqty

Kraus	Lrnr, Matl, Tech
Lightner	Ach, Curr
Lubienski	Eqty, PS, Curr
Luhm	TBlf, Curr
Lunenburg	Curr, Tech
Mac Iver	Lrnr, Curr, CAI
McClung	Manp, Ach, Alg
Moyer	Manp, Matl, Lrnr
Moyer	Manp, Matl, Lrnr
Norman	Curr, Tchg
Owens	Revw, Rsch, Curr
Pape	Curr, Insv, Comm
Presmeg	Ethn, Curr
Raman	Matl, Calc
Risacher	Prsv, Curr
Schiel	Gift, Ach, Curr
Schoen	Curr, Ach, Matl
Schoen	Curr, Blf
Snow-Renner	Assm, Curr
Stecher	Curr, Tchg
Stevenson	Curr, Ethn, Lrnr
Taber	Insv, Curr, Matl
Useem	TBlf, Matl, Insv

Discrete mathematics (DscM); Probability (Prob); Statistics (Stat)

Dissertations and theses

Baab	Vis, Stat, CAI
Bragg	CAI, Stat
Gregorio	Stat, TKnw
Haller	Insv, Prob, TKnw
Manon	Prob, Rep
Schaffner	Tchg, Lrng, Stat
Sefair Nader	MMed, Prob, Stat
Swenson	TKnw, Prob
Tarr	Curr, Lrng, Prob
Yum	Lang, Stat

Articles

Batanero	Prob, Revw
Castro	Prob, Tchg
Galagedera	Stat, D/R
Lesser	Stat, Tech
Munisamy	Lrng, Prob
Pereira-Mendoza	CC, Stat

Papers

Cudmore	Stat, Comp, Comm
High	Tech, Stat, TAtt
McGatha	Stat

Gender differences (Gend)

Dissertations and theses

Agoora	Gend
Burns	Gend
Cook	D/R, Styl, Gend
Fuller	Gend, Att
Gavin	Gend
Gober	TBlf, Gend, Eqty
Godfrey	Gend, Att, Ach
Hyde	Gend
Jensen	Gend, Att, Soc
Marolla	Gend, Ach
Matsushita	Gend
Mukulalwendo	D/R, Gend, Ach
Nimmons	Vis, Att, Gend
Norman	Gend, Anx
Odett	Assm, Gend, Ethn
Otomo	Tech, Anx, Gend
Pettitt	Gend, Soc
Quinlan	Gend, Aff
Schillinger	Ethn, Gend
Singletary	Ach, Gend, Grpg
Swor	Gend, Aff
Tai	Calc, Gend, Curr
Tamassia	Assm, Gend, Ethn
Wear	Gend, Ach, Att
Wilson-Relyea	Gend, Blf
Woods	Gend, Grpg, Writ

Articles

Atweh	Soc, Lang, Gend
Dugdale	Comp, Gend, PS
Falk	Gend, Comp
Lupart	Ach, Gend, Gift
Lutfiyya	Gend, Styl
Manning	Ach, Gend
McLure	Ach, Gend
Murphy	Calc, Gend, Ethn
Norton	Gend, Aff
Olszewski-Kubilius	Gift, Assm, Gend
Park	Gend, Ethn, Ach
Raymond	Gend, Eqty
Shaver	Soc, Gend
Slavit	GCal, Calc, Gend
Stillman	Mtcg, Gend, PS
Wolters	Aff, Gend, Styl

Papers

Austin	Att, Writ, Gend
Seitsinger	Ach, Att, Gend
Spurling	Ach, Ethn, Gend
Wilson	Gend, PS, Assm

Geometry (Geom); Measurement (Meas); Spatial visualization (Vis)

Dissertations and theses

Alexander	Frac, Meas
Baab	Vis, Stat, CAI
Barrett	Lrng, Geom
Bell	Geom, Tchg, Tech
Bishop	Patt, Lrng, Meas
Bonnette	Geom, CAI, Vis
Bremer	Geom, Tknw, Tatt
Cassity	Vis, Aff, GCal
Chronaki	Vis, Comm, Tchg
Desmond	Geom, TKnw
Johnson	Meas, Aff, Comp
Keiser	Geom, Mscn, Curr
McDougall	CAI, TAtt, Geom
Melczarek	PS, CAI, Geom
Ng	Geom, Vis
Nimmons	Vis, Att, Gend
Paul	Prf, Geom
Poehl	Geom, Assm
Round	GCal, Geom, Tchg
Russell	PS, Rep, Vis

Articles

Battista	Rep, Geom
Boulter	Meas, IC
Chinnappan	Gift, Geom, Rep
Embse	Geom, GCal, Vis
Fischbein	Patt, Geom
Forrester	Tchg, Meas, Est
Gorgorio	Vis, Geom, Styl
Khoo	CAI, Vis
Kordaki	Meas, Lrng, Soc
Owens	PS, Vis, Rep
Rahim	Geom, Vis, Lrng
Spence	IC, Meas
Steele	Comm, Geom

Papers

Garrity	Manp, Geom, Grpg
Roark	Styl, Vis

Gifted (students) (Gift); Knowledge (student's) (Knw); Learners (characteristics of) (Lrnr); Learning disabled (LD); Learning style, cognitive style (Styl); Misconceptions (Mscn)

Dissertations and theses

Bateman	CC, Styl, Ethn
Belmarez	LD, Tchg, Ach
Brown	Ach, PS, Mscn
Buck	Ach, Gift
Callan	Assm, Ach, Styl
Chen	CC, PS, Knw
Colarulli	Styl
Cook	D/R, Styl, Gend
Doyle	LD, Ach, Tchg
Drueck	A/S, LD, D/R
Dube	Att, Lrnr, Ethn
Graham	Assm, D/R, Mscn
Hall	LD, Ach
Hassani	Calc, Knw
Jackson	D/R, Knw
Johns	CAI, LD
Johnson	Ach, LD, Lrng
Keiser	Geom, Mscn, Curr
Maccini	Alg, LD, Tchg
March	Ach, Lrnr
McGraw	Lrng, Styl
Orton-Flynn	LD, NSns
Prichard	Lrng, D/R, Mscn
Sachse-Lee	Lrng, LD, PS
Starnes	Ach, Lrnr, Tchg
Swanger	Mscn, Tchg, LD
Szanto	Arth, LD, Mscn
Tauzer	NSns, LD, Lrnr
Tinklep. Biegler	Alg, Tchg, Mscn
Trimboli	Ach, Assm, Lrnr
Vasquez	Tchg, Lrnr
Watkins	LD, Lrng
White	D/R, LD, Revw
Wick	TKnw, Rep, Mscn
Ysasi	Lrng, Styl

Articles

Allen	Curr, LD
Anderman	LD
Anderson	Calc, Mscn
Bennett	M/D, D/R, LD
Bezuidenhout	Mscn, Calc
Boaler	Styl, Tchg
Boulton-Lewis	Rep, Revw, Styl
Carpenter	NSns, Styl, Arth
Cawley	LD, Arth
Chick	Styl, Lrng
Chinnappan	Gift, Geom, Rep
Clement	PS, Lrnr
De Bock	Alg, Mscn
Fuchs	Curr, LD
Geiger	D/R, Styl
Gorgorio	Vis, Geom, Styl
Kenney	PS, Styl
Lehrer	Styl, Lrng
Lupart	Ach, Gend, Gift
Lutfiyya	Gend, Styl
MacGregor	Rep, Styl, Alg
Malloy	Soc, PS, Styl
McDougall	LD
Miglietti	D/R, Lrnr
Morin	LD, M/D
Moschkovich	Alg, Knw
Nunes	Tchg, LD, Lrnr
Olszewski-Kub.	Gift, Assm, Gend
Ostad	LD, D/R, Tchg
Padget	LD
Pepper	NSns, Lrng, Styl
Pillay	Alg, Knw
Qi	Lang, Styl, PS
Rogers	Assm, Gift, Styl
Sato	Styl, Lrnr
Schliemann	Styl, M/D
Segal	Mscn, Prf
Shama	Styl, Ethn
Stacey	Frac, Styl
Terao	PS, Styl
Waldron	LD, Ach
Watson	Knw
Wolters	Aff, Gend, Styl

Papers

Adami-Bunyard	Ach, Att, Lrnr
Bright	TBlf, Lrnr, TKnw
Brinkworth	Ach, Att, Lrnr
Clements	Tech, Revw, Styl
Gelman	Styl, Revw, Mtcg
Grobecker	LD, Lrng, Ach
Grobecker	A/S, Styl
Higbee	Curr, Soc, Lrnr
Howie	Ethn, Ach, Lrnr
Koebley	Lrnr, Blf
Kraus	Lrnr, Matl, Tech
Mac Iver	Lrnr, Curr, CAI
McFarland	Ethn, Eqty, Gift
Moyer	Manp, Matl, Lrnr
Narahara	Lrnr, Ach
Patrick	PS, Styl
Roark	Styl, Vis
Schiel	Gift, Ach, Curr
Stevenson	Curr, Ethn, Lrnr
Takahira	CC, Ach, Knw
Thurlow	Ach, LD
Verna	Soc, Gift, Ethn
Wiest	PS, Lang, Lrnr
Williams-Miller	Styl, Blf
Wilson	Mtcg, Styl

Implications of research, interpretations of research (Impl); Research issues, methods (Rsch); Reviews of research (Revw)

Dissertations and theses

Chadwick	CAI, Revw
Dilullo	Revw, Anx, Ach
Kett	Assm, Rsch, Curr
King	CAI, Revw
Leggett	Ethn, D/R, Impl
Mehana	Ach, Soc, Revw
Rafael	Calc, Revw, Lrng
Smith	D/R, Rsch, Tchg
White	D/R, LD, Revw

Articles

Batanero	Prob, Revw
Boulton-Lewis	Rep, Revw, Styl
Cooper	Assm, Rsch
Dickey	Tech, Revw
Kantowski	Ach, Curr, Revw
Riley	Ach, Curr, Revw
Stevenson	Impl, Revw
Underhill	Rsch, D/R

Papers

Barton	Ach, Revw
Clements	Tech, Revw, Styl
Gelman	Styl, Revw, Mtcg
Guo	Rsch, Curr, Ethn
Hawkins	Assm, Revw
Jacob	Rsch, Ethn
Joftus	Curr, Assm, Rsch
Owens	Revw, Rsch
Owens	Revw, Rsch, Curr
Shaughnessy	Ach, Assm, Impl
Wenglinsky	Tech, Ach, Revw

Inservice teacher education, professional development (Insv); Preservice teacher education (Prsv)

Dissertations and theses

Arvold	Prsv, Tchr, Lrng
Blanton	Prsv, TKnw, Lrng
Britton	Tblf, Prsv
Bryan	Prsv, TKnw, TBlf
Campbell	TBlf, Insv
Crespo	Prsv, Writ
Durant	Insv, Calc, Tchg
Ebby	Prsv, Lrng
Egger Moellwald	Insv, TAtt, TBlf
Everage	Insv, Tchr, Tchg
Haller	Insv, Prob, TKnw
Hazelbaker	CAI, Prsv, Grpg
Hughes	Prsv, Curr, Tchg
Kersaint	Prsv, Alg
Lowery	Prsv, TKnw
Luebeck	Tech, Comm, Insv
Martin	Prsv, Tchg, TKnw
McNeill	Insv, Tatt
Preston	Rep, Curr, Insv
Quinn	PS, Lrng, Prsv
Roth McDuffie	Curr, Insv, Tchg
Rusch	PlcV, Prsv, Lrng
Sentif	Insv
Thomas	TBlf, Comp, Prsv
Troy	Writ, Prsv
Van Gorp	CAI, Prsv
White	Tchr, Insv, Tchg
Wilkerson	Insv, TKnw, Assm

Articles

Cooney	Prsv, TBlf
Frykholm	Comm, Tchg, Prsv
Kinney	Insv, Tchg
Quinn	Tech, Prsv
Wenstrom	Prsv, TKnw
Wohlhuter	TBlf, Insv, Tchg

Papers

Bowman	TBlf, Insv
Chang	Insv, Tchg
Cheng	TBlf, Insv, Tchg
Halpin	Comp, Prsv, IC
Haslam	Curr, Insv
Martin	Prsv, TKnw, Tchg
McGinnis	TAtt, TBlf, Prsv
McLymont	Insv, Mtcg, Tchg
Pape	Curr, Insv, Comm
Risacher	Prsv, Curr
Slavit	Prsv, Att, TBlf
Taber	Insv, Curr, Matl
Useem	TBlf, Matl, Insv
Vacc	TBlf, Insv
Yoon	TBlf, Insv, PS

Language, psycholinguistics (Lang); Representations, modeling (Rep)

Dissertations and theses

Abu Diab	Writ, Ethn, Lang
Atkins	Writ, Rep, Calc
Brown	Att, Calc, Rep
Contreras Fran.	TKnw, Rep, Tchg
George	PS, Calc, Rep
Golley	IC, TBlf, Rep
Jones	GCal, Rep, Att
Manon	Prob, Rep
Moskal	Comm, Rep, Patt
Pape	PS, Lang
Preston	Rep, Curr, Insv
Russell	PS, Rep, Vis
Smith	Curr, Rep
Vick	Lang, IC, Comm
Wick	TKnw, Rep, Mscn
Yum	Lang, Stat

Articles

Abramovich	PS, Comp, Rep
Atweh	Soc, Lang, Gend
Barton	Lang, Tchg
Battista	Rep, Geom
Bell	CC, Lang
Berry	Assm, Rep
Bielen	Lang, Soc
Borasi	Lang, Writ
Boulton-Lewis	Rep, Revw, Styl
Chinnappan	Gift, Geom, Rep
Cifarelli	Lrng, PS, Rep
Edwards	Rep, Comp
Even	Rep, Alg
Giroux	Rep, Arth, Lrng
Hitt	Rep, Alg
Janvier	Rep, Alg
Keller	Rep, Calc
Koyama	Rep, Frac, Grpg
Ludlow	TAtt, Assm, Rep
MacGregor	Rep, Styl, Alg
Meira	Patt, Rep, Alg
Owens	PS, Vis, Rep
Qi	Lang, Styl, PS
Setati	Lang, Tchg
Siegel	Writ, Lang
Wade	Lang, Nsns, Soc

Papers

Johari	MMed, Rep, Comp
Ozgun-Koca	Rep, Tech, Att
Shepard	Assm, Lang
Stein	Lang, PS, Tchg
Wiest	PS, Lang, Lrnr

Learning, learning theories, cognitive development (Lrng); Philosophy, epistemology (Phil)

Dissertations and theses

Ambrose	A/S, PS, Lrng
Arvold	Prsv, Tchr, Lrng
Atkinson	Curr, Ethn, Lrng
Barrett	Lrng, Geom
Bishop	Patt, Lrng, Meas
Blanton	Prsv, TKnw, Lrng
Brewer	Lrng, TBlf
Dias	Lrng, Eqty, Tchg
Ebby	Prsv, Lrng
Fong	Lrng, Tchg
Goodrow	Lrng, Curr, NSns
Harrington	Matl, Lrng
Itterly	Lrng, Tchg, Curr
Johnson	Ach, LD, Lrng
Kelly-Begin	Phil, Blf, Tchg
Langston	Comm, Writ, Lrng
Lindboe	Lrng, Tchg, Alg
Mason	Grpg, Lrng
McGraw	Lrng, Styl
Nowosad	Blf, Lrng
Picard	Aff, Lrng
Prichard	Lrng, D/R, Mscn
Pyke	Lrng, Alg
Quinn	PS, Lrng, Prsv
Rabb-Liu	Tchg, Lrng
Rafael	Calc, Revw, Lrng
Rasmussen	Curr, Lrng, AdvM
Roberts	Curr, Phil, Soc
Roddick	Lrng, Ach, Calc
Rusch	PlcV, Prsv, Lrng
Sachse-Lee	Lrng, LD, PS
Schaffner	Tchg, Lrng, Stat
Tarr	Curr, Lrng, Prob

Thomas	Phil, Tech
Thorpe	Lrng, Tchg, Alg
Watkins	LD, Lrng
Ysasi	Lrng, Styl
Zandieh	Calc, Lrng

Articles

Braten	Phil, A/S, Lrng
Chick	Styl, Lrng
Cifarelli	Lrng, PS, Rep
Frazier	Lrng
Giroux	Rep, Arth, Lrng
Kamii	NSns, Lrng
Koehler	Curr, Comp, Lrng
Kordaki	Meas, Lrng, Soc
Kota	PS, Lrng, Arth
Lehrer	Styl, Lrng
Mulligan	Lrng, M/D
Munisamy	Lrng, Prob
Oppong	Comp, Alg, Lrng
Owens	Lrng, Att
Pepper	NSns, Lrng, Styl
Peters	NSns, Lrng
Rahim	Geom, Vis, Lrng
Saenz-Ludlow	Arth, Lrng, Tchg
Steffe	Lrng, M/D
Tirosh	IC, Lrng
Wertheimer	Phil, Curr
Whitenack	Tech, TKnw, Lrng
Wiegel	NSns, Grpg, Lrng
Williams	Lrng, Assm, Alg

Papers

Bottle	Soc, Lrng
Bright	Tchg, Lrng
Grobecker	LD, Lrng, Ach
Hubbard	GCal, Lrng, Alg
Olivier	Att, Tchg, Lrng
Rasmussen	AdvM, Tech, Lrng
Reed	Tchg, Lrng, PS

Metacognition (Mtcg); Patterns, relationships, math connections (Patt); Problem solving, reasoning (PS); Proof, justification (Prf)

Dissertations and theses

Allen	Aff, PS
Ambrose	A/S, PS, Lrng
Bishop	Patt, Lrng, Meas
Blaine	Curr, Patt
Brown	Ach, PS, Mscn
Burton	D/R, PS, Tech
Chen	CC, PS, Knw
Crawford	Calc, Writ, Mtcg
Edwards	AdvM, Prf, PS
Friel	PS, Ethn
George	PS, Calc, Rep
Ginsburg-Block	PS, Ach, Att
Graham	Comm, PS
Grant McLoughlin	PS, Tchg, Blf
Hernandez Gard.	PS, Mtcg, Grpg
Hylton-Lindsay	Aff, GCal, Mtcg
Johari	MMed, Alg, PS
Lim	PS, Soc, Ethn
Mcfadden	Alg, PS
Melczarek	PS, CAI, Geom
Meza	PS, Mtcg
Moskal	Comm, Rep, Patt
Mwangi	Tchg, PS
Norko	Matl, Patt
Osborne	Mtcg
Pape	PS, Lang
Paul	Prf, Geom
Pysher	Alg, Mtcg, Ach
Quinn	PS, Lrng, Prsv
Retzer	Mtcg, Oral, Writ
Rock	PS, Tech, Writ
Russell	PS, Rep, Vis
Sachse-Lee	Lrng, LD, PS
Searcy	PS, Mtcg
Shin	PS, Mtcg
Simon	PS, Patt
Song	Writ, Curr, Patt
Sproule	Alg, PS
Williams	Writ, PS
Zeek	TBlf, Tchg, PS

Articles

Abramovich	CAI, NSns, Patt
Abramovich	PS, Comp, Rep
Artzt	Mtcg, PS
Cai	CC, PS
Christou	Mtcg, PS
Cifarelli	Lrng, PS, Rep
Clement	PS, Lrnr
Dekker	PS, Grpg
Dugdale	Comp, PS
Dugdale	Comp, Gend, PS
English	NSns, PS, Ach
Fischbein	Patt, Geom
Kenney	PS, Styl
Kota	PS, Lrng, Arth
Malloy	Soc, PS, Styl
Maqsud	Mtcg
Meira	Patt, Rep, Alg
Mwangi	PS, Arth
Owens	PS, Vis, Rep
Qi	Lang, Styl, PS
Segal	Mscn, Prf
Stillman	Mtcg, Gend, PS
Terao	PS, Styl

Papers

Chen	CC, PS
Gelman	Styl, Revw, Mtcg
Heiney	PS, Ach
Kline	M/D, PS
Lubienski	Eqty, PS, Curr
McLymont	Insv, Mtcg, Tchg
Patrick	PS, Styl
Reed	Tchg, Lrng, PS
Stein	Lang, PS, Tchg
Stone	Grpg, PS, Comp
Wiest	PS, Lang, Lrnr
Wilson	Mtcg, Styl
Wilson	Gend, PS, Assm
Wong	Blf, PS
Yoon	TBlf, Insv, PS